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Courtesy of the New York State Museum

BOB-WHITE *Colinus virginianus virginianus* (Linnaeus)
MALE AND FEMALE
½ nat. size

Birds of America

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OUT-DOOR BIRD STUDY

By Edward Howe Forbush

State Ornithologist of Massachusetts

NATURALLY those who begin to study birds desire, first, to know their names and to be able to recognize them at sight. This is the A B C of bird study — the mere beginning — but nevertheless important. To learn to identify birds readily, the student needs good eyes and ears, a good opera-glass or field-glass, a notebook and pencil, a good book with colored illustrations, and some training in careful observation. It will be a great advantage if there is a museum accessible, where he can see mounted specimens. A small, light-weight opera-glass is all that is necessary for viewing the smaller birds; for water-fowl or sea birds a marine glass is most useful.

To learn the proper use of the opera-glass, select some bird, if possible, that is sitting still. Have your back to the sun. Focus the glass on the tree, and then the bird by noting the position of the branch and sighting the glass as you would a gun.

Note the size of the bird. It will be difficult at first to judge the size in inches, but you may compare it with certain common and well-known birds. You may have a scale of sizes, beginning with the Yellow Warbler or Chipping Sparrow, and reading like this: Chipping Sparrow, Song Sparrow, Bluebird, Catbird, Robin, Dove, Crow. Observe these birds well; note the size of each. Turn to your book, and get it in inches. Write it down; commit it to memory; have it always in mind. By making good use of such a scale, you may become expert in judging size by comparison.

Next, the shape of the bird is important. Note whether the bird as a whole is slim or stout. Some allowance may be made as to how the feathers are carried at the time. All birds can raise or lower the feathers of the body at will. If you can see the shape of the beak, you may be able to refer the bird at once to the family in which it belongs. If it is not much larger or smaller than a Song Sparrow, and has a short, conical bill, probably it is a Sparrow. If it is a little smaller than a Song Sparrow or about the size of a Chippy, and has a short but slender bill, a trifle curved, probably it is a Warbler, or belongs to some other insect-eating family.

The length and shape of the tail are important. Try to see whether the tail is long or short, rounded, square, or forked. If the bird is large, with a hooked beak and long tail, probably it is a Hawk. If the beak is long and straight, or nearly so, the tail short and the legs long, it must be a Heron, or some other wader.

The color of the bird is very important; indeed, it is about the only feature ordinarily observed. First, note the color of the upper part, *i. e.*, the top and sides of head, back and sides of neck, back, wings, and tail; next, that of the under parts — throat, front of neck, breast, and belly. Remember that the breast and belly often will seem darker than they really are, on account of being in shade; thus a pure white will seem gray. Be careful to note just where each color actually is; then note any conspicuous mark, for such a mark alone, taken with the size of the bird, often is enough to establish its identity.

Many birds have some prominent mark or color by which they may be identified in the field. In this work the notebook and pencil are indispensable. Note down — on the spot — size, shape, color, and markings, also shape and appearance of beak and tail (when you can get them), for future reference. This will help you to identify the bird, and to fix its identification in your memory.

The expert can determine many birds at a distance by their characteristic flight; and the beginner, by making good use of his opportunities, will soon learn to recognize a Buzzard by its wheeling flight, or a flying Green Heron by the downward bend of its wing-tips. All Woodpeckers have a bounding flight, as they travel by rising for a few wing beats and then sliding downward with the wings partly closed. The Goldfinch also has an up-and-down flight. The Pipit, the Yellow Palm Warbler and the Water-Thrushes all wag the tail up and down while moving about — something not habitual with most other birds. The gait of the bird on the ground may determine the species or at least the family. Crows, Grackles, Blackbirds, Oven-birds, and some others walk, while most birds progress by hopping, although now and then a hopping bird may surprise you by walking a few steps on clear, open ground.

The notes of birds serve as an excellent means of identification, although there are a few that imitate well the notes of others. Among these are the Crow, Blue Jay, Catbird, Brown Thrasher, and the famous Mockingbird.

As the novice will see colors in the wrong places or fail to see colors in the right places, so he will hear birds wrongly or fail to hear them at all. An ornithologist, if stricken blind, might still get an approximate idea of the number of birds of most species resident in a locality for most birds are vociferous.

Many people, however, have great difficulty in recognizing or remembering bird notes. Others are unable to differentiate between tones and calls of an entirely different quality. In studying bird songs, the notebook is indispensable. Write down in syllables what the bird seems to say as you hear it at the time. Accent it as the bird accents it, and if you are musical you may even get it by note. These notes may refresh your memory, and help fix the call or song in mind.

Birds do not really articulate, or, if they do, the sounds are mostly vowels; yet we imagine that they enunciate words. In learning the songs of birds you may take the notes of some common loud singer, like the Robin, as a standard, and by comparison determine how those of other species differ from it. This is good training for the ear. Some people cannot see any difference at first between the songs of the Robin and the Wood Thrush, but to the initiated they have nothing in common. In quality of tone, beginners usually see little difference between the songs of the Baltimore Oriole, the Robin, the Scarlet Tanager, and the Rose-breasted Grosbeak; nevertheless, the Oriole's lay is almost a pure whistle, the tune varying much with different individuals; the Robin's song is a bold warble, a little strident in places; the Tanager sings a weaker, finer note, like an undeveloped, hoarse Robin; and the Grosbeak has a beautiful warble, rather loud at times, but perfectly pure and mellow.

Unfortunately for the novice, a bird may have two or more distinct songs. Some commonly have many, while no two individual birds of certain species ever sing precisely the same tune; but this disparity only makes the study of their vocal powers more interesting. Occasionally a very gifted individual will eclipse the performance of all rivals. The caw of the common Crow is well known, but its love notes and its conversational abilities when ministering to its young are seldom recognized.

As one advances in the study, the manner in which birds feed, the character of the locality in which they are found, the location and construction of the nests, the size and color of eggs, all will tend toward fixing the identity of birds. In time, one learns to know many birds at a glance, until, almost unconsciously, he comes to the day when most of the birds he sees or hears are old friends.

Birds require food, shelter, nesting places, and protection from their enemies. In localities furnishing all these essentials birds always may be found in their seasons. A broad river valley, with fresh-water meadows, containing small, marshy ponds, if dotted with trees and bordered by farming lands, orchards, and wooded hills, should be an ideal place for birds.

When migrating, they appear to stop by preference only where there is an abundance of suitable food with which they may replenish the waste of tissues worn by long flights.

At such times birds that have found food attract by their calls others flying by or overhead; these also are heard or seen by others still; and so they gather from far and near.

Beginners in bird study usually choose the spring as the best time for making the acquaintance of the birds, but it is well to begin early in the year, when birds are few, and learn to recognize each species as it comes. It is also well to remember that the old males usually come first, and the females and young birds later.

Early mornings and late afternoons are usually the best times for observation, partly because most birds are then active and singing, and partly because there often is little wind movement then. The least motion is quickly noticed when the branches are still; but when the wind blows, birds are more likely to be overlooked. Also they are more shy and retiring on windy days; when they can spread their wings and be borne away with little effort.

Photograph by H. T. Bohlman

WILLIAM L. FINLEY MAKING PHOTOGRAPHIC STUDIES OF PELICANS

Cool days, with strong northwest winds, are unfavorable for bird study. Birds, excepting water-fowl and shore birds, usually seek shelter during heavy rains, but are active during light, warm showers.

People, whose study of birds must be confined mainly to the city, can best observe the common birds in large parks or cemeteries, where birds, being protected and seeing people continually, are unsuspicious and may be readily approached. Water birds may be found usually in spring and fall in ponds of large park systems.

July is one of the most interesting months in the bird calendar, for then there are many young birds about, and some of the birds that have reared their young begin to slip away toward the south and shore birds begin to come from the north.

The bird seeker must learn to notice every sound and movement in the woods and fields. He must try to follow every strange note to its source. The expert usually hears a bird before he sees it. Some birds are ventriloquists — when the bird is hidden by the leaves, the song seems to come first from one tree, then from another. For this reason the Scarlet Tanager can sometimes be found in summer by going around the place from which the sound of its voice seems to come, or by passing it, and then returning to it.

Many birds have the power of singing so softly that they seem to be far away when really just at hand. The Catbird does this quite commonly, and several other species occasionally sing their full songs in the fall as in the spring, except that they are audible

only a few yards away. To find birds one must cultivate the senses of sight and hearing to the utmost.

The bird student soon finds that some localities are better supplied with bird-life than others. Many species, while migrating, follow or visit such coasts or broad river valleys as lie along or across their natural lines of migration.

Even the novice need not be taught how to approach the more common and familiar birds, which seem to court, rather than, to shun human companionship; but there are times when it becomes necessary to get close enough to a rare bird to examine it carefully or to observe its habits, while a near approach to a shy bird may tax the powers of the most skilful observer.

Courtesy of H. T. Middleton

WILD LIFE PHOTOGRAPHER MAKING A PORTRAIT STUDY OF GREAT HORNED OWL

To be successful in this, the beginner must imitate, in some respects the behavior of the fox or lynx, animals which are able occasionally to get near enough to wild birds to capture some that the human animal finds difficult to get within range of his field-glass. How are the wild animals enabled to do this? (1) They are inconspicuously or protectively colored. (2) Their feet are softly padded and their movements noiseless. (3) They go on all fours, crawling close to the ground, and, taking advantage of the cover, keep concealed as much as possible. (4) Their movements are so slow, at need, as to be imperceptible. In all these things we may imitate them.

Bird students often are dressed conspicuously, and shod with hard leather. Their tread, as it jars on the delicate senses of the lower animals, seems to shake the ground. The dead wood is broken under foot. They talk, laugh, and even shout with a loud voice. Standing erect, they are exposed to the view of birds for a mile or more around. Some of them wear large headgear, adorned with long feathers, and turn their heads about quickly.

Eggs of American Birds

PLATE No. 3

1. Crossbill
2. Purple Finch
3. Ruby-throated Hummingbird
4. Goldfinch
5. English Sparrow
6. Vesper Sparrow
7. Grasshopper Sparrow
8. Chipping Sparrow
9. Junco
10. Towhee
11. Crested Flycatcher
12. Phœbe
13. Indigo Bunting
14. Scarlet Tanager
15. Skylark
16. Kingbird
17. Gray Kingbird
18. Wood Pewee
19. Orchard Oriole
20. Baltimore Oriole
21. Blue Jay
22. Meadowlark
23. Bobolink
24. Cowbird
25. Red-winged Blackbird

From a Drawing by Henry Thurston

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EGGS OF AMERICAN BIRDS

(Plate Number Three)

They swing their arms, and move about, pointing, gesticulating and assuming attitudes, all of which no doubt seem menacing and fearsome to the shyer birds.

Even such students will see birds, for many of our feathered friends have become accustomed to strange sounds and antics. But the expert who sees all the birds has taken lessons from the fox — he hunts alone.

When one is in the company of others, nature never completely enthralls him. His attention is more or less distracted by his companions; he fails to see and hear all. The bird student should attend entirely to the birds, and then they will requite his singleness of purpose. When alone, he has no one to talk to, and no interruptions. The human voice warns all creatures from afar of the approach of their arch enemy, man; let it be stilled, and nature is at peace.

We many muffle the tread by wearing rubbers, or, better, shoes with rubber soles. Those having merely an outer lift and tap of rubber on heel and toe are best. The rubber will prevent the feet from slipping on rocks and pine-clad hillsides. The light canvas tennis shoes commonly used are not sufficient protection to the feet on rough, stony ground. Leather footgear should not be stiff or squeaky. We may avoid the rustling of dry leaves by choosing for our tramps the early morning, when the dew is on, or the hour succeeding a light shower. Care should be used not to tread on dry sticks so as to break them, as sharp sounds alarm all wild creatures.

In dress, avoid black, white, and all striking colors and contrasts. A dull, dead leaf color, like that of the shooting coats ordinarily sold to sportsmen, is good at any time. In spring and summer a dull green is very good. Certain grays and browns harmonize with natural objects.

The vision of most birds is far superior to our own or that of mammals; it is nearly, if not absolutely, perfect. Therefore it is necessary, in approaching shy birds, such as waterfowl or Hawks, to use, as cover, trees, shrubs, or grasses. Often one can advance only on hands and knees, or crawl prone like the serpent.

Frequently I have approached wild fowl by crawling in the paths made by raccoons, hares, opossums, and other animals under grasses and low shrubbery. At other times I have been obliged to creep or wriggle through short grass, in mud and water, to reach some desired point of observation. In such cases, when within sight of the birds a screen of vegetation must be kept always before the face, or the birds will take alarm and be off at once. Birds so wild that they will not allow a man on foot to come within a half a mile may be approached noiselessly in this way within twenty or thirty yards, but the labor and discomfort are great.

When nearing shy birds in this manner, keep under cover and do not raise the head. If it becomes necessary to take an observation, the head must be raised but little, and both raised and lowered so slowly that the motion will be imperceptible. Always approach against the wind, if possible, for the birds are then less likely to hear you. Do not allow the sun to strike on any metallic or glass object, for the reflection or flash will give the alarm. Many people will not take such pains in approaching birds. Others cannot, but must either decoy the birds within reach, watch them with long range glasses from wooded shores, or get up to them in less difficult and more conventional ways. Such people may see shy birds sometimes at rather close quarters by driving slowly along the country roads with a horse and carriage. The extra elevation given the observer by the vehicle increases his visual possibilities, and the birds have learned not to be suspicious of such an equipage on the road.

Birds sometimes may be approached on horseback better than on foot. Gunners sometimes employ grazing cattle as moving shields, behind which they near the game unnoticed.

When approaching shy birds on foot in the open, a zigzag, circular, or sidelong course may bring you much nearer than will a direct forward movement. It is well to avoid the

MR. FINLEY (ahead) AND MR. BOHLMAN CALL ON THE MURRES

appearance of stealth, and seem not to notice your bird. Make no quick movements, and do not hurry. Most birds meet violent deaths, and they must be constantly on the watch for their enemies. They are accustomed to flee for their lives from quick-moving creatures.

Shy water birds and marsh birds sometimes may be approached by the skilful use of a canoe. Let the canoe drift slowly along the marshy margin of a river, and watch the reeds and rushes closely. In this way Rails, Coots, Gallinules, and even Sandpipers are seen at close range. I have gotten very near resting flocks of shore birds by sitting or lying motionless in an Indian canoe, and drifting down upon them. The canoe may be used to advantage on a river not only in watching Bitterns, Rails, and other marsh birds, but also in going close to the smaller land birds in trees and bushes on the bank. For this purpose the canoe is much superior to the rowboat. It is noiseless, and the paddler is always facing ahead. Many birds may be seen at close range by working a sail-boat up or down a river before a light, fair breeze. A small boat covered with bushes, and sculled or allowed to drift down on birds sometimes is useful. A fast-sailing boat is one of the best devices for approaching swimming birds on a windy day. Such a boat, manoeuvred skilfully, will be upon the birds before they are aware of its nearness. During a squall I once drove a sloop so near a Merganser that the bird rose on the next sea as we swept past. There is an advantage in sailing down wind, as the bird must rise against the wind, and may come quite near, giving a good view, first of the breast and then of the back, as it turns away, The noisy naphtha launch is the abomination of the bird student. It has driven most of the water-fowl from our eastern rivers.

When birds have young in the nest they usually are less shy than at other times, forgetting their regard for their own safety in their solicitude for the welfare of their offspring. For this reason, if for no other, the bird student should strive to find the nesting sites. A word of caution is necessary here, however. Those who have found and watched bird's nests often complain that something usually happens to the eggs or the young birds. There are creatures always on the watch for an opportunity to rob birds' nests. The fox sometimes follows a man-track. Perhaps he has learned that the path of a man in the woods often leads to food. Too often the man-trail leads to wounded or dead birds and animals; the remains of a lunch may reward the fox. Sometimes fish heads and other offal are thrown around the camping place. So Reynard cunningly follows. Those who closely examine the nests of birds in trees or shrubbery are likely to be watched unawares by the astute and cautious Crow, the thieving Jay, the mischievous squirrel, or the bloodthirsty weasel. I have learned by sad experience that a close or frequent examination of a bird's nest in the woods only serves to call the attention of the bird's enemies. I have seen both Jay and squirrel following a man through the woods, keeping well hidden from his sight. If you approach a nest containing young, the cries of the parent bird may apprise all the wood folk of its location. Therefore, watch the birds with a glass, and do not go to the nest. Those who carelessly approach the nests of Herons or water-birds that breed in colonies are likely to drive the old birds away, and thus expose the eggs and young to the attacks of Crows, for Crows are quick to seize such opportunities.

When watching a nest, approach it with caution, and observe it from such a distance that neither young nor old will be much disturbed by your presence. Many interesting habits may be seen in this way, if a good glass is used.

He who, unable to go far afield, waits and watches for birds in some secluded spot, or imitates their notes and so calls them to him, may learn more of their ways than will the most active pedestrian. The country dweller may entice birds to the homestead by planting fruit-bearing trees, shrubs, vines, and other plants that will supply them with food. Even the urbanite possibly may attract a few Chickadees or Nuthatches in winter by putting out suet on trees; but other means are required to bring birds about the student in the field. You may facilitate your winter bird study by scattering millet seed in suitable spots along your walks, or by hanging bones and suet in favorably situated trees, which you can visit

now and then. In spring or fall small grain will attract Thrashers, Blackbirds, Bobwhites, and Crows. Chestnuts and corn scattered about in the fall or early winter will gather all the Blue Jays in the countryside. In summer, if the person is carefully concealed, some of the shyest birds may be brought near by mimicking their notes. Many bird notes may be imitated by the voice.

It is difficult for most birds to understand the meaning of a silent human figure lying prone and half concealed. While so reclining I have been closely approached by Eagles and Vultures. Birds that recognize at once the upright figure of a man, and flee from it at sight, sometimes will manifest no fear of the same man stretched on the ground, and may even be curious enough to approach him. A concealed hunter sometimes will attract wildfowl toward the shore by waving a rag on the end of a stick, or by using a small dog trained to gambol in the grass. There are easier and pleasanter ways, however, of attracting the shy birds of the woods.

Photo by Irene Finley

WILLIAM L. FINLEY MAKING FRIENDS WITH A DESERT SPARROW IN ARIZONA

All wood birds, both shy and rare, may be out-generaled by the quiet sitter. They seem to wonder what manner of thing this is that looks so like a man, but neither smokes nor swears, talks, laughs, nor tramps about. Slowly they draw near and peer at the curiosity, and finally they apparently conclude it to be harmless, and go about their usual avocations.

There is one great drawback, however, to this method. In summer our woods are infested with mosquitoes, as well as gnats and flies. A pair of light leather gloves, a net or veil, of a mesh smaller than ordinary mosquito netting, to wear over the hat and head, and a light blanket or wrap which can be carried in a shawl-strap, will enable one to keep quiet and yet defy the troublesome insects. A light camp-stool also is useful.

One who desires to camp in the summer will need a different outfit. For more than twenty years I have used a small A tent, made of brown duck, with a flap to tuck under the blankets. It is seven feet long, four feet wide, and three feet high. A small line is sewed along the top, which may be tied at each end to a tree or stake, to support the tent. Eight loops of heavy twine are staked down with forked sticks, to hold out the sides. The ends are made of coarse cheese cloth, or fine netting, and the lower edges are provided with flaps to tuck under the blankets. A rubber blanket and a single light woolen one, with a cotton bag, to be filled nightly with moss or grass for a pillow complete the outfit, which may all be rolled up and carried by a strap handle or packed above a knapsack. The birds soon become accustomed to this tent, and even will alight upon it. For several evenings it was the favorite perch of a Screech Owl. From it I have watched the shore birds and seals on barren islands. In it I narrowly escaped being run over by two deer. The panther has circled around it, and once a wildcat actually walked on it, standing on my breast until I awoke. From such a tent, or from a screen of netting, you may watch the Ruffed Grouse or Partridge and her callow brood. You may camp in a heronry, and see the old birds come and go and feed their

Photograph by W. L.Finley

H. T. BOHLMAN TAKING A DIFFICULT SHOT AT A PIGEON GUILLEMOT'S NEST

On the rocks off the Oregon coast

young. I have camped on a small, dry mud bank in a great swamp, with no other dry land above water for miles around, being entertained by the nightly concerts of mosquitoes, Ducks, Herons, frogs, and alligators, without the least discomfort or inconvenience.

There are shelters in which one may remain concealed, varying in construction from the log camp of the sportsman to the bough camp of the Indian, or the " hide " or " blind " of the gunner. The umbrella blind used by bird photographers is an excellent device for watching birds, if set up in the shade. In full sunlight it is about as comfortable as a Turkish bath. If the birds to be watched are very wary it is best to set up the blind and leave it for several hours, that they may become accustomed to it. Then the observer should be accompanied by one or more persons when he goes to conceal himself within it. When his companions leave it will allay the birds' suspicions and curiosity may impel them to close approach. Wooden decoys used in connection with " blinds ", and bird-calls will enable a bird student

HERBERT K. JOB AT BLIND ON THE LOUISIANA RESERVATION

Here he secured wonderful films and pictures of Blue Geese within a few feet

to lure most shore birds as near to him as they will come to the gunner. A skilfully constructed blind placed on or near a long sand bar or point of the shore, and a few lumps of mud or turf judiciously distributed on the point, may enable one to get a good view of several species of wild-fowl. Apparently the flying birds at a distance mistake the clods for some of their number, and come on intending to alight. If wooden decoys were put out, the Ducks might discover their mistake and become suspicious; but on finding the objects to be mere clods, they sometimes will alight. The best decoys are live birds anchored so that they can swim about. Sometimes a single Grebe or Duck in a small pond will attract a flock of several species. Many game birds and water-fowl can be readily baited; but this is a method for those owning estates where birds can be protected, and should not be attempted by any bird student who would assemble the birds thus only to leave them to the tender mercies of the pot-hunter.

Those who wish to lure the sea birds may have some success with Gulls by putting out fish or offal upon some beach or bar, near a blind; but Gulls may be seen anywhere about the harbors of cities where they are not molested. To attract the birds of the ocean, however, one must go several miles to sea, where by throwing overboard cod livers, or some similar food, several species may be lured near the boat.

ORDER OF GALLINACIOUS BIRDS

Order *Gallinæ*

GROUND-DWELLING birds constitute this order. They are fowl-like in form and appearance: the bill is stout, convex, and short; the legs are stout and moderately long; the front toes webbed and the hind toe elevated; the wings are short, rounded, arched, and strong; the tail varies in length in the different species; the head is small; and the body heavy.

Birds of this order are polygamous. The eggs are numerous and large. The young are covered with down when hatched and are able to run about very soon after leaving the shell. Gallinaceous Birds obtain their food almost entirely from the ground, and in getting it they indulge in a great deal of scratching of the soil. The flesh of most species is edible and is generally light-colored.

Representatives of the order are found on every continent, but only the one suborder *Phasiani* has representatives (four families) of regular occurrence in the United States and Canada.

BOB-WHITES AND QUAILS

Order *Gallinæ;* suborder *Phasiani;* family *Odontophoridæ*

THE true Quails and Partridges are Old World birds and their American representatives are the Bob-whites and Quails. There are about seventy species in the western hemisphere, most of which are confined to the tropics and only seven of which are found north of the southern border of the United States.

These birds are rather small in size with heads completely feathered and sometimes crested; the nostrils covered with a naked scale; the legs stout and moderately long; the tarsi and toes naked; the front toes webbed at the base, the hind toe raised and rather small; the wings short, rounded, arched, and strong; the tail varying from less than one-half to about four-fifths the length of the wing; and the body heavy. A great variation in plumage is shown between the members of this family.

The eggs of the Partridges are numerous and large and the young when hatched are covered with down and are able to care for themselves.

The Quails of the United States, because of their interesting habits and marvelous diversity of form and color, are a notably attractive group. All are handsome birds, but the most striking and beautiful species live in the Southwest and on the Pacific coast. Only one occurs in the Eastern States. The others are widely distributed from Texas to California and Oregon. Their range was, and still is, continuous along the entire southern border of the country from the Atlantic to the Pacific; but there is an irregular belt along the northern border and a large area in the interior, comprising the Great Plains, the northern three-fourths of the Great Basin, and the Rocky Mountains, in which they appear to have been originally wanting.

With few exceptions our Quails welcome the extension of agriculture, and the added food supply in farmed areas results in an increase of their numbers. This is equally true of the Bob-white of the East and of some of the desert species of the West. So fully does the Bob-white appreciate the advantages of the farm that its range has increased with the extension of the cultivated area, especially west of the Mississippi.

Their cheerful disposition, their beauty, and their value as food usually win for the Quails a welcome to any farm. But, as the investigations of the Biological Survey show, these birds, with rare exceptions, not only are harmless, but usually are very useful to agriculture. This is particularly true of the Bob-white, which constantly feeds on injurious weed seeds and insects, and thus renders valuable service to the farmer. In return for this good service it is but fair that these birds should be treated with friendly care and interest.

BOB-WHITE

Colinus virginianus virginianus (*Linnæus*)

A. O. U. Number 289 See Color Plate 40

Other Names.— Quail; Bob-white Quail; Partridge; Virginia Partridge.

General Description.— Length, 10 inches. Plumage above, chestnut, black, ashy, and tawny, mixed; below, different shades of brown with black marks. Feathers of crown, somewhat erectile. Found in open field.

Color.— Adult Male: Forehead, lores, line over eye extending to back of head, chin, and throat, white; the line from gape, below eye, and side of head deep dusky; crown, back of head, neck all around, and upper parts of breast, reddish-brown; upper parts, a mixture of chestnut, black, ashy, and tawny, this last color edging feathers of shoulder and inner secondaries, forming a continuous line when wing is closed; under parts, white tinged with warm brown on chest, each feather with several narrow V-shaped spots of black, sides of body, flank, and wing-coverts, brownish-red, abdomen marked more or less with double crescentic black bars; upper part of breast outlining white throat, deep dusky brown; primaries, brown; tail, ash; bill, dusky horn almost black; iris, deep brown. Adult Female: Differs from male in having the throat buff instead of white, less black on breast and coloration less intense, the reddish tints of male being supplanted by a dull pinkish hue; black crescents of under parts, narrower; bill, horn color.

Nest and Eggs.— Nest: On the ground under old rail fences, sheltered by a thick growth of grass or small bushes, or at the foot of stumps; constructed of dry grasses, leaves, or weed stalks. Eggs: 12 to 18, pure white.

Distribution.— Eastern North America from South Dakota, southern Minnesota, southern Ontario, and southwestern Maine south to eastern and northern Texas, the Gulf coast, and northern Florida west to eastern Colorado; introduced in central Colorado, New Mexico, Utah, Idaho, California, Oregon, and Washington.

The call of Bob-white is one of the cheeriest sounds in nature. Nearby, it commands attention; distant, it harmonizes with other sounds of summer, yet never palls upon the ear. It names the bird. Northerners call him Quail; Southerners, Partridge; but he has named himself

Photo by H. K. Job Courtesy of Outing Pub. Co.

BOB-WHITE

She was undisturbed by the camera

and ornithologists have decided that he is the prior authority. His cry is interrogatory. It is pleasing, heartening, delightful. Farmers translate it as *more wet,* saying that it foretells rain. And this prophecy is always welcome in the drouth of summer.

Everything about the bird is so attractive that men have always loved him — and hunted him. Perhaps there is no other wild bird to which the American people are more indebted. He delights in the farm; is the friend and companion of man; a destroyer of weeds and pernicious insects; a close-lying, swift-flying game bird; and, last as well as least, is the joy of the epicure. From the standpoint of the greatest good to the greatest number he is supreme; his wide range and easy accessibility make him always immediately available. He is the bird for field trials where staunch dogs show their training. Annually each autumn something like 400,000 sportsmen go out from the cities in this country to hunt Bob-white. In many cases the rental of the privilege of shooting more than pays the taxes on the farm. Thus Bob-white pays indirectly most of the taxes in many school districts and so settles for the education of the children on the farms.

After the spring rains, when the warm south winds give promise of coming summer, the birds are mating and the call of the "Quail" is heard on all sides. They are good-natured, affectionate birds, but now during the rivalries of the mating season the males become quarrelsome and sometimes fight fiercely. The mating over, the happy pairs settle down, each to its allotted place. Rarely two females use the same nest and there is some indication of polygamy in such cases. The male, however, is very attentive to his mate, is a good provider, and has been known to assume the entire charge of the brood upon the death of the female, brooding, feeding, and protecting them at all times like the fondest mother.

The young are hatched after about twenty-four days of incubation. They all pop out of the shell at about the same time and are ready to leave the nest as soon as their natal down is dry. A farmer in mowing one day overran a nest as the young were hatching. He was astonished to see the little ones, just from the shell, run away and hide in the grass. Thus nature provides for their safety. When surprised by a sudden intruder the mother tries to lead him away by many wiles, while the tiny chicks squat close to the ground and remain invisible until danger has passed. As the young grow they keep together, never going back to the nest but wandering about in the vicinity. They frequent weedy gardens, potato fields, grain and stubble fields, bushy pastures and stump lots as well as the edges of woods. The ordinary, more or less neglected farm is a paradise for them.

The birds of a bevy are very fond of each other and always keep together if possible. When scattered by the common enemy they soon commence their plaintive two-syllabled call and are never satisfied until they are reunited, when they converse together using a great variety of tender low notes. They sleep side by side in a circular group on the ground, heads out, ready to burst away like a "feathered bombshell" if surprised by the enemy. When hunted they often take refuge in almost impenetrable thickets and swamps. They have learned by necessity the art of concealment. A full-plumaged male will flatten himself and disappear on ground almost as open as a well kept lawn, and the full bevy needs only a few overhanging fern fronds or a leafy spray to render their concealment perfect. At need, Bob-white can disappear in the open before one's very eyes and reappear again from the same spot as if he had for the time being put on the cloak of invisibility. Sometimes he appears to give no scent and the dogs cannot find him.

There is some evidence of occasional southward migration for comparatively short distances. These occur at the approach of winter. Severe northern winters sometimes almost exterminate the bevies. Resting on the ground as they do at night, a heavy snowstorm may cover them. If, as sometimes occurs, rain follows the snow and is succeeded by freezing weather a crust is formed that imprisons the poor birds by thousands and starvation follows. Continued deep snows alone may decimate the species by covering deeply their food and the gravel so necessary to their digestion. Those who feed Bob-white in winter always should include coarse sand or grit with the grain.

Hard winters and an increasing number of gunners have reduced greatly the numbers of this bird in the northern parts of its range, but we are beginning to learn how to propagate it artificially. In the coming years it may be quite possible to breed the species in unlimited numbers. This gives hope for its future in all parts of its range. EDWARD HOWE FORBUSH.

The Bob-white Quail is fond of farming regions, especially where wheat and the other small grains are cultivated. It thrives in the South on cow-peas and many other foods which are plentiful. It is quite as important to see that the foods the birds require at different seasons

Photo by R. W. Shufeldt

TEXAS BOB-WHITE (½ nat. size)

Except for paler coloration and smaller size, it is like the common Bob-white

of the year are plentiful, and that they have proper covers and protection, as it is to see that their enemies are controlled. Good shooting depends on a proper attention being given to all of these matters. Briers, both berry and flower briers, the blackberry, the wild rose, and many others, make safe and attractive covers and they also furnish much food. The young Quails live largely on insects found in the fields and woods. Later they eat many berries and the seeds of plants, including weeds. In the fall they glean the stubbles for the grain lost at the harvest and in winter they often live on sumac, wild rose hips and other plants which are seen above the snow. At this season many birds will perish unless food be supplied. A little corn, served with grit at established feeding places will save hundreds of birds during a severe winter.

The Florida Bob-white (*Colinus virginianus floridanus*), a smaller and darker form of the better known common Bob-white, is found in the peninsula of Florida except in the extreme northern part.

The Texas, or Texan, Bob-white (*Colinus virginianus texanus*) is a paler variety and occurs from the southeastern corner of New Mexico to southern Texas and south into northern Mexico.

Photographs by H. K. Job — Courtesy of Outing Publishing Co.

BOB-WHITES

Nest and brood — **Seven weeks old**

MASKED BOB-WHITE

Colinus ridgwayi *Brewster*

A. O. U. Number 291

Other Names.— Arizona Bob-white; Hooded Quail; Ridgway's Colin; Ridgway's Quail.

General Description.— Length, 10 inches. Plumage above, reddish-brown, brown, black, and gray, mixed; below, orange-chestnut.

Color.— ADULT MALE: Forehead, sides of head and neck, black with or without a white line over eye; *crown, hind head, and nape, mixed black, white, and pale brown;* hindneck and shoulders, grayish-reddish-brown; back, rump, and upper tail-coverts, minutely spotted with blackish, brown, and grayish-white; wing-coverts, tawny, each feather barred with blackish, edged and tipped with dull white; primaries, dusky-brown, edged with white, inner web scalloped with the same color; secondaries, dusky barred and speckled with pale raw umber and cream; the inner secondaries and shoulder-feathers, broadly edged with yellowish white; tail, above bluish-ash finely speckled and waved with whitish, below gray lightly and irregularly barred and waved with grayish-white; under parts, orange chestnut usually immaculate except on flanks where feathers are usually tipped with an oval white spot behind a subterminal black bar; lower tail-coverts with a wedge-shaped black spot bordered with whitish; bill, black; feet, horn color; iris, brown. ADULT FEMALE: Forehead, lores, a broad stripe over and behind eye, chin, and throat, pale warm buffy; crown, sides of head (narrowly), neck, and upper parts in general, variegated with gray, brown, and tawny; beneath, dull pinkish buff lightly crossed with brown crescentic marks, these absent on flanks which are more brownish-buff.

Nest and Eggs.— NEST: A shallow excavation on the ground under the shelter of grass or bushes. EGGS: As far as known, 6, white, unmarked.

Distribution.— Middle part of southern border of Arizona south to central-northern Sonora.

The plumage of the Masked Bob-white is strikingly different from that of his eastern cousin. He is a handsome little chap in his bright chestnut-colored waistcoat, which looks red in the sunlight, and like most of his tribe he seems to be very well aware of the fact. Wherefore he announces himself with the same cheerful and confident tones which have given him and his relatives their common name. One observer notes that toward evening the short introductory note, which is usually subdued, is omitted altogether. When the covey is scattered, especially in the evening, they are assembled by means of a peculiarly soft and rather plaintive two-note call, resembling the syllables *hoo-we.*

From much of their normal range in the Southwest these attractive and interesting little birds have been driven by advancing agriculture and the accompanying man with a gun, intent upon destroying every living thing for food or for "sport."

In the vicinity of Tucson, Arizona, not so very many years ago, the birds were so plentiful, tame, and persistent in their habit of keeping closely bunched in coveys of fifteen or twenty, that it was no uncommon thing to kill five or six at a single shot — on the ground, of course. And yet many people wonder about the disappearance of wild life!

GEORGE GLADDEN.

MOUNTAIN QUAIL

Oreortyx picta picta (*Douglas*)

A. O. U. Number 292

Other Names.— Plumed Partridge; Mountain Partridge.

General Description.— Length, 12 inches. Plumage above, olive-brown; below, grayish-brown and chestnut. A crest of two straight feathers about two inches long.

Color.—Adults: The lores and the extreme chin, whitish; patch below eye and extending a short distance behind, and throat, orange-chestnut bordered on top by black and behind by whitish space; rest of front parts of body, grayish-brown more tinged with olive or pale rufous above; back, wings, and tail, plain olive-brown; the inner secondaries and shoulders bordered with buff or tawny forming a conspicuous lengthwise streak when wings are folded; primaries and tail, brownish, the latter finely flecked with the color of the back; abdomen, rich chestnut, the sides and flanks with broad bands of black and rufous; center of lower abdomen and thighs, whitish or pale chestnut; under tail-coverts, black streaked with chestnut; crest, black; bill, dusky with paler base; feet and iris, brown.

Nest and Eggs.— Nest: Placed on the ground under the shelter of tufts of weeds, grass, or small bushes. Eggs: 6 to 12, sometimes 18 or 20, creamy white, deposited on a bed of dead leaves or grass.

Distribution.— Humid districts of the Pacific coast from southwestern Washington south to Monterey County, California; introduced on Vancouver Island.

The mountain climber in California may now and then hear a high, clear, sweet, plaintive call *quit quit quit queeah* from the slope above him and may even catch a glimpse of a handsome bluish-plumed bird disappearing into the chapparal. A near view shows it to be the elegant Mountain Quail, the largest and in some ways the finest of its tribe. In California it seems to prefer the brush, chapparal, or timber to the open country, and the mountains to the valleys or plains, but in Oregon and Washington, where the climate is cooler, it seeks lower levels and is quite common in some of the coast valleys of southern Oregon, while in Washington it can exist even on the plains.

The systematists have divided it into three subspecies: the Mountain Quail of the humid coast region south to Monterey County, California, which has been introduced into western Washington and Vancouver Island; the Plumed Quail (*Oreortyx picta plumifera*) of the semi-arid regions from Oregon south to Inyo and Ventura counties, California, and east to the edge of Nevada; and the San Pedro Quail (*Oreortyx picta confinis*) of the San Bernardino and San Gabriel mountains in southern California and the San Pedro Martir Mountains in Lower California. The distinctions between these races relate mainly to coloration and the differences are not great. Their habits are much alike.

The male has a cheery call somewhat like the last note of the common call of Bob-white. Any boy can whistle it. Also he has a crowing note which has been compared to that of a young bantam cock. When the flock is startled its members emit a chuckling sound slightly similar to that which comes at such times from a bevy of eastern birds, but here the resemblance ceases.

The Mountain Quail rarely raises more than one brood in a season but its broods are large and occasionally eighteen or twenty eggs have been found in a nest. The tiny, downy chicks when first hatched are striped down the back with brown and yellow, streaked on each side of the head and speckled over the body with brown and black. After the first few days the little plumelets on the head begin to develop, forming a slight top-knot. The chicks are full of vitality, very active, and so easily frightened at the first alarm that they will scatter like a charge of shot and hide in an instant. When the young are small the female sometimes emits a scolding note somewhat similar to that of a guinea hen. As they grow toward maturity they frequent the chapparal, and are quite at home in the thickets. When scattered they are called together again by a note that Edwin Sandys likens to the cry of a young Wild Turkey.

This Partridge loves the high mountain glens and their foaming streams. It rarely gathers in large packs as does the Valley Quail but the members of a single brood, or perhaps two, associate together. In Oregon it thrives on bushy hillsides along the smaller streams. When pursued it is more likely to take to its legs than to its wings and to lead the hunter an arduous chase, by running until beyond gunshot and then flying fast and far. As winter comes on the flocks start on foot down the mountain trails and roads which lead into the valleys. In the spring they return to the highlands in the same way, but in mild winters there seems to be little,

Courtesy of American Museum of Natural History

CALIFORNIA VALLEY QUAIL

Beautiful, lively, and loquacious

if any, migration. This bird cannot adapt itself to civilization as well as the Valley Quail but disappears before the advance of settlement and should be assiduously protected because of its beauty and utility. EDWARD HOWE FORBUSH.

The food of the Mountain Quail of the arid regions has been studied in the laboratory of the United States Biological Survey. The stomachs examined, twenty-three in number, were collected in California. The food consisted of animal matter 3 per cent., and vegetable matter 97 per cent. The vegetable food consisted of grain, 18.20 per cent.; seeds, practically all of weeds or other worthless plants, 46.61 per cent.; fruit, 8.11 per cent.; and miscellaneous vegetable matter, 24.08 per cent. The grain included wheat, corn, barley, and oats. (Judd.)

SCALED QUAIL

Callipepla squamata squamata (*Vigors*)

A. O. U. Number 293

Other Names.— Blue Quail; Cotton Top.

Description.— Length, 9½ inches. Crest short, not entirely distinct from crown-feathers. General color, fine bluish-ash, more bluish on throat and neck, whiter on abdomen which is tinged with brown centrally; head and the full broad crest of soft blended brown feathers tipped with pure white; feathers of neck all around, upper breast, and upper back, sharply edged with crescentic lines of black; exposed surface of wing tinged with light ocher brown, the inner secondaries strongly edged with buff, forming a lengthwise stripe; side feathers, bluish-ash, each feather with a white stripe bordered on both sides with brown; rest of under parts, a blending of rusty or pale brown with elongated arrowhead or heart-shaped darker spots; bill, dusky; legs, brownish-horn; iris, dark brown.

Nest and Eggs.— NEST: A slight hollow scooped out of the sand under the protection of a clump of weeds or grass; lined with a few leaves or coarse grasses. EGGS: 8 to 16, creamy or pale buffy-white, minutely speckled with a darker shade of buff or shades of brown, distributed regularly over entire surface.

Distribution.— From central Arizona to western Texas, north to southern Colorado and over most of the Panhandle of Texas, east nearly to central Texas, and south to the valley of Mexico.

The Scaled Quail and the Chestnut-bellied Scaled Quail (*Callipepla squamata castanogastris*) are two excellent wild food birds, identical in appearance save that the last named has a chestnut patch on the belly. The birds are found in the Rio Grande valley, Texas, and northern Mexico; the first named form is found also in New Mexico, southern Arizona and the valley of Mexico. Like the other western birds, they are runners. An observer who once had a flock in his room for a time says: "The speed they made when they started on a course around the room against the wall was most remarkable. I would have backed them against the fastest Gambels or Valley Quails that ever ran on a desert or prairie." The country inhabited often is full of thorns which prevent the use of dogs and render the shooting comparatively uninteresting. Natural foods undoubtedly are sufficiently plentiful in most parts of their range, since the birds once were very plentiful. The control of their enemies would seem to be all that is necessary to perpetuate these birds.

Two or three broods are reared in a season, the

Photo by R. W. Shufeldt

SCALED QUAIL

Adult male in breeding plumage (from life)

cock assisting in the care of the young but not in incubation.

Although the Scaled Quail is a desert species, it comes into more or less direct relation with agriculture, sometimes feeding upon cultivated land and about farm buildings. Half of its food consists of the seeds of weeds. It is highly insectivorous, fully one-fourth of its food consisting of insects. The dryness of its food makes this Quail dependent on water, and the sight of a number of them is a sure indication of a nearby supply of water.

CALIFORNIA QUAIL

Lophortyx californica californica (*Shaw*)

A. O. U. Number 294

Other Names.— Valley Quail; Top-knot Quail; California Partridge; Helmet Quail.

General Description.— Length, 11 inches. Males are ashy-brown above, and slaty-blue and tawny below with chestnut patch; females are ashy-brown above and below. Both sexes have the head adorned with a glossy black crest, narrow at the base and gradually widening into gracefully recurving plumes.

Color.—Adult Male: General color of plumage of *upper parts, deep ashy brown* with a strong olive tinge, the feathers of nape and neck black-edged and centered with fine white dots between; front half of crown, brownish-yellow; rear portion and back of head, light brown; forehead, whitish with fine black lines; a white stripe from above eye along upper side of head to nape, bordered above by a narrow black stripe which extends across to front of crown; a black stripe from back of eye running toward neck and circling across upper breast; chin and throat, black bounded behind by another white stripe circling backward and around front of breast cutting off the black of throat; forebreast, deep slaty-blue; rest of under parts, tawny with *a large area of rich chestnut on abdomen,* where marked with circular edgings of jet black except in center of chestnut patch; inner secondaries and shoulder-feathers, broadly marked with brownish-orange; sides and flanks, like color of back with broad sharp longitudinal white stripes; under tail-coverts, tawny, each feather with a wedge-shaped spot of blackish-brown; bill, dusky horn; legs, brownish-horn; iris, deep brown. Adult Female: Head and neck all around and breast, plain olive-gray without any markings on head; lower parts, without the chestnut and warm colors of the male but scaled like his, sides with white streaks; crest very much shorter.

Nest and Eggs.— Nest: A slight hollow lined with grass, under brush heaps, beside a rock, bushes, old fences, or other shelters, sometimes in gardens or even in "stolen" chicken nests. Eggs: 12 to 16, creamy, beautifully marked with spots and blotches of old gold, sometimes pale brown and chestnut over entire surface.

Distribution.— Humid districts of Pacific coast region from southwestern Oregon south to Monterey County, California; introduced into Vancouver Island, Washington, and Colorado.

The California Quail — elegant, graceful, and lovely — is one of the liveliest of all American game birds. During daylight it is in motion most of the time, and, even when settled quietly on stump or fence, its head or eyes are constantly moving that it may catch the first glimpse of any of its many enemies. Although it often seems tame and confiding during the close season or where not hunted, it leads the hunter a merry chase after the shooting season begins, and its habits of sprinting and long-distance running are likely to baffle any but well-trained dogs.

It is known commonly in California as the Valley Quail, to distinguish it from the Mountain Quail of the higher lands; but ornithologists now recognize two subspecies, the California Quail and the Valley Quail (*Lophortyx californica vallicola*) both entirely distinct from the Mountain Quail. The first is a bird of the humid coast region and has been introduced into Washington. The second, which differs only slightly from the first, is chiefly a bird of the drier or sub-arid regions of the interior, from the Klamath Lake region in Oregon south to Cape San Lucas and east to Nevada, but it is not an inhabitant of the more eastern desert region where its place is taken by Gambel's Quail. The species represented by the two subspecies lives in the valleys and on the foothills in California from near sea level to perhaps a mile above it.

Our little Quail is not only beautiful and lively, it is loquacious also. No bird perhaps has a more varied and pleasing language for if there is such a thing as bird-talk this bird surely is an accomplished conversationalist. The hunter soon learns to know the meaning of some of its notes. There is a common scolding call, resembling a little the crowing of a cock, something like *ka-ka-kao.* Some assert that the bird is merely swearing in Spanish, *Caraho!* Its calls

vary. One has been rendered *kuk-kuk-ka* or *kuck-kuck-ke;* but *coo-coò-coo* with the accent strongly on the second syllable, which is pitched higher than the others, represents very well the call most commonly heard. Hunters translate its calls into various phrases, which it seems to imitate, such as "Cut it out," "Cut me too," "Oh go way," etc.; but these imaginative renditions hardly hint at the expressive powers of the Quail's language, which may be heard at its best when the young and old are in flocks together.

In spring, while the female sits on the nest, the male is attentive and watchful. His cry as he occupies some elevated perch nearby on stump, rock, or fence shows that he is on guard. The little chicks exhibit their inherited liveliness soon after they leave the egg, and have been seen to run away and hide from sudden danger with pieces of their natal shell still sticking to their backs. They are little striped, downy, bobby things with trifling top-knots. As they grow older the families gather until in early fall they assemble in "packs," usually not far from some spring or other water, where they can drink and bathe. It is believed that they post sentinels after the fashion of Crows, especially when the flock is feeding or dusting near a road or passing over rather open ground where cover is insufficient or scattered. One bird then takes an elevated position and remains on watch until relieved by another. The sentinel is frequently changed. In the flocking season a Quail perched in full view is a sign that the flock is near at hand. The little company is easily startled; a sudden motion, a falling leaf, the snapping of a twig or the rustling caused by a dog is enough to set them scurrying. When suddenly alarmed by the rush of man or beast coming rudely upon them they are likely to rise and fly in all directions, but perhaps more often they will skulk and run, fast and far. When the flock is alarmed, its members give the danger signal, a loud whispering sound such as may be produced by blowing the breath out suddenly between the teeth. Then begins a rapid extended scoot through the chapparal or underbrush.

This Quail has decreased much in numbers since the latter part of the last century. Where "packs" of thousands once lived, now only hundreds can be found. It has been destroyed in part for the market and in part by the farmers, for although it is a feeder on insect pests it eats grain and it long ago learned the virtues of grape juice and therefore earned the hostility of certain grape growers and paid dearly for its luxurious tastes.

Photo by W. L. Finley and H. T. Bohlman

CALIFORNIA QUAIL

EDWARD HOWE FORBUSH.

GAMBEL'S QUAIL

Lophortyx gambeli *Gambel*

A. O. U. Number 295

Other Names.— Arizona Quail; Gambel's Valley Quail.

General Description.— Length, 10 inches. Color above, bluish-ash; below, bluish-ash and white. Crest of soft recurved feathers.

Color.— ADULT MALE: Upper parts, plain bluish-gray with neck feathers with dark shaft lines; crest, black; crown, reddish-brown; forehead, black streaked with white; *a black stripe in front of chestnut crown patch; below this a streak of white;* a black stripe from back of eye running backward and circling across upper breast; chin and throat, black with a white stripe between it and the eye stripe; inner secondaries edged with white; forebreast, clear ash like color of back; rest of under parts, buffy whitish; *center of abdomen with a large pure black patch;* sides rich chestnut with broad sharp white stripes; under tail-coverts, white streaked with dusky; bill, black; iris,

brown. ADULT FEMALE: Top of head, uniform grayish-brown from bill to neck; crest, brown, smaller and with a less number of feathers than in male; throat, dull whitish with some dark streaks; no head markings or black patch below where feathers are dull whitish with dusky longitudinal streaks; otherwise similar to adult male.

Nest and Eggs.— NEST: A hollow in the sand beneath a creosote bush, mesquite, cactus, yucca, or a tuft of grass; sparsely lined with grass or leaves. EGGS: 10 to 12, white or buffy-white, irregularly speckled, blotched, or clouded with shades of brown or lavender.

Distribution.— Desert region of southern California, southern Nevada, Arizona, and southwestern Utah, east to the southwestern corner of Colorado, and also in southwestern New Mexico to the Rio Grande valley and the El Paso region of extreme western Texas, and south into northeastern corner of Lower California and to Guaymas, Sonora.

One November evening as the sun went down I found myself in camp by a small group of water-holes far up in a desert cañon of the Santa Catalina Mountains of Arizona. I was alone, my guide having gone back several miles to look for the third member of the party whose absence had caused some uneasiness. I was sitting on a bowlder enjoying the wild, unusual surroundings when I was startled by a low *Chā-Chéā, Chā-Chéā,* which came from the little thicket behind me. This was followed at once by another call of a like nature, then another and another. I had no idea as to the nature of the language or from whom it emanated. Throwing over me the rotting remains of an old tent cover lying near I crouched among the bowlders and waited. The calls increased in number, the soap weed seemed filled with them and then suddenly out stepped a splendid Gambel's Quail, the first I had ever seen. Its long head-plume waved gradually as it advanced. Quickly others appeared and before long there before me, not twenty feet away, more than forty birds rimmed the edge of the water-hole. After a day spent in the desert they had come to the only place for miles around where water could be found in order to drink before going to roost. In a few minutes they began flying up into one of the few stunted, scrubby trees which grew in the cañon. So intent had I been watching them that I failed to note a second company nearly as large which had come to another water-hole perhaps twenty yards away. But this was not all. They continued to arrive until fully two hundred had taken up their quarters for the night in the scrubby trees around our camp. Now and then there was a flutter as some bird changed its perch. There was also much conversation after they had settled for the night, just as other folk are sometimes known to talk after going to bed.

Later I met them many times on the desert and watched them as with low words of caution they ran from the cover of one creosote bush or cactus plant to another. It was rare that I saw them take wing; even when the guide one day declared that he proposed to vary our diet of peccary and bacon that night with a mess of broiled Quail, and began to shoot them, the survivors preferred to trust their legs rather than their wings while in quest of safety.

The Gambel's Quail is a prolific bird. Ten or a dozen beautifully spotted and blotched eggs are laid and the long dry summers of the country it inhabits are very conducive to the health and happiness of little ground-running birds. There is plenty of food to be found, too, here in these glorious deserts, and should you spy a flock at eating time you might find a menu something like this: grasshoppers, ants, grain, berries and mesquite beans. Surely this feathered racer of the desert is thrice blessed with dainties.

T. GILBERT PEARSON.

MEARNS'S QUAIL

Cyrtonyx montezumæ mearnsi *Nelson*

A. O. U. Number 296

Other Names.— Montezuma Quail; Messena Partridge; Fool Quail; Fool Hen; Black Quail.

General Description.— Length, 9 inches. Males are streaked above with black, reddish, and yellowish-brown, and below they are red and gray; females are barred above with black, brown, and lavender, and below they are pale lavender-brown. Both sexes have the bill very stout; the tail less than half the length of the wing; and an elongated square-cut crest of soft, blended, depressed feathers.

Color.— ADULT MALE: Plumage of upper parts streaked with black, reddish, and yellowish-brown;

forehead black with small streaks of white changing to brown crest; a black throat patch; a black streak on cheeks and one of the same color over eye continuous with another from gape along lower side of head, meeting that of the throat and enclosing a broad oval white space; remainder of head and broad space below throat patch, white; below the white area is another narrower streak of black extending from nape across front of chest; *wings, marked with round black spots,* the primaries, browner and spotted with white or buff; sides of neck, sides and flanks, ashy with large round white spots; middle line of breast and abdomen, rich dark chestnut; under tail-coverts, velvet-black; bill, blackish; feet, bluish-gray; iris, deep brown.

Adult Female: Head without stripes, mostly a warm grayish-cinnamon; upper parts variegated and finely barred with black, tawny, and dull lavender, the feathers with broad white shaft streaks; general color beneath, pale lavender-brown; chin whitish; neck, bluish-ash, freckled and bordered with black; breast and sides with blackish shaft streaks.

Nest and Eggs.— Nest: On ground; rather well made for a bird of this genus, entrance sometimes concealed and partially arched over. Eggs: 8 to 12, white.

Distribution.— Arid regions from central Arizona and central New Mexico east to central Texas, and south to the mountains of northern Coahuila, and Chihuahua, and eastern Sonora.

Mearns's Quail is an interesting bird. It is about the size of the Bob-white, but it is unmistakable on account of its peculiar markings. The head is black and brown, marked with white. The upper parts are brown barred with black, the sides of the breast and flanks are almost black and dotted with white, which causes the bird to look something like a dark little Guinea Hen. They are nowhere common, and, possibly, now are extinct in the United States, excepting the birds purchased and owned by breeders. Their flesh is excellent and no doubt they could be made an attractive addition to the game bag.

It is a confiding bird and like some of its relatives has earned the name of "Fool Hen" by making no attempt to protect itself and by allowing itself to be killed with a stick or stone.

The habits and food of this Quail vary considerably with the locality. It is easily tamed and is quite at home in cultivated fields. Away from civilization (according to Dr. Judd) it prefers districts covered with open forest, with alternate areas of grass and scattered bushy undergrowths, or hillsides covered with grass and bushes. Bendire records finding this species in rocky ravines.

Photograph by R. W. Shufeldt

MEARNS'S QUAIL

Mounted specimen in United States National Museum

GROUSE

Order *Gallinæ;* suborder *Phasiani;* family *Tetraonidæ*

HE Grouse include the larger forms of the rough-footed, fowl-like game birds. They are characterized by completely feathered legs (except in the case of the Ruffed Grouse and its subspecies, the Canada Ruffed Grouse), and by the fact that the nostrils and nasal grooves are concealed by feathers. The toes are naked, except in the Ptarmigans, and are equipped along the edges with comb-like growths, which are shed from time to time. The tail, which may be rounded, forked, or pointed, has from sixteen to twenty-two feathers. The region about the eye generally is more or less bare and some species have a naked spot on the side of the neck. The commonest colors in the Grouse's plumage (which is dense and soft) are various shades of brown, red, and gray, with dark greens and purples appearing in some species; but conspicuous colors and striking patterns do not occur. The male birds usually show more pronounced colors than the females, and there are some seasonal variations, especially in the Ptarmigans. Many species of Grouse prefer open plains and some even inhabit deserts. Generally, however, Grouse prefer the woods and spend most of their lives on the ground, where they get the greater part of their food and always build their nests; but some of the species when flushed will usually alight in trees nearby. Their nests are roughly fashioned of twigs and leaves. The eggs number from about six to twice as many, or more, of a brownish cast, more or less spotted or blotched, especially in the case of the Ptarmigans.

Grouse subsist upon seeds, buds, berries, snails, worms, insects and various other animal and vegetable forms. They are polygamous, excepting the Ptarmigans, and the courtship performances of the cocks include various kinds of strutting and dancing, and also the peculiar drumming demonstrations, especially of the Ruffed Grouse. Also the cocks frequently fight savagely for the possession of the hens. Generally Grouse seem intentionally to depend upon their colors for concealment, and often will lie crouched on the ground until they are almost trodden upon. When they do take to flight, it is usually at great speed and with a whir of the wings which is fairly startling. This is especially true of the Ruffed Grouse.

The flesh of all of the Grouse has a very fine flavor, excepting that of a few of the species which at times subsist largely upon spruce buds and other resinous growths. The family comprises about twenty-five species and numerous subspecies, distributed throughout the northern parts of the Old and New worlds, but is especially well represented in North America, where it reaches its highest development.

DUSKY GROUSE

Dendragapus obscurus obscurus (*Say*)

A. O. U. Number 297

Other Names.—Blue Grouse; Pine Grouse; Pine Hen; Gray Grouse; Fool Hen.

General Description.—Length, 22 inches. Color above, slaty-black; below, bluish-ash. No crest; tarsus, feathered; tail, fan-shaped with feathers (20) broad and obtuse; tail and wing about the same length.

Color.—Adult Male: Ground color of the plumage of head, neck, and upper parts in general, slaty black almost completely obscured by narrow traverse mottling of bluish-ash, these markings becoming pale brown on shoulders and secondaries; shoulder-feathers with white shaft streaks and terminal spot of white; lores and line back of eye, broken gray and white, producing an indistinct streak; tail, brownish-black marbled with gray tipped with a broad slate-gray bar; throat, broken slate and white; checks dusky-black; rest of under parts, dark bluish-ash in front, lighter behind; feathers of lower parts margined with white, broader on the flanks and under tail-coverts; bill, black; comb, over eye, and neck drum, yellow; iris, orange-brown. Adult Female: Above, dusky-black, the plumage varied by traverse bars of yellowish-brown, broader and more regular in front, broken and mottled with other shades of brown, behind; beneath, as in the male, bluish-ash, broken along the center line of the abdomen; the throat and sides with broken traverse bars of yel-

lowish-brown; middle tail-feathers much mottled intruding on the ashy tip.

Nest and Eggs.— NEST: A slight depression in the ground under grass or bushes or alongside of a log; thinly lined with dry grass or pine needles. EGGS: 7 to 10, cream or pale buffy, spotted and speckled over the entire surface with sharply defined spots of reddish brown.

Distribution.— Rocky Mountains from northern Utah and northern Colorado to central-western New Mexico and central Arizona, and west to East Humboldt Mountains, Nevada.

The Dusky Grouse is a western bird, the largest and finest of American wood Grouse. It is next in size to the Sage Hen and weighs two and one-half to three and one-half pounds. There are four recognized races of this Grouse, namely: the Dusky Grouse (*Dendragapus obscurus obscurus*) of the American Rockies, the Sooty Grouse (*Dendragapus obscurus fuliginosus*) of the Pacific coast ranges, Richardson's Grouse (*Dendragrapus obscurus richardsoni*) of the Canadian Rockies and south to Montana and Wyoming and the Sierra Grouse (*Dendragapus obscurus sierræ*) of the mountains of southern Oregon, California and south to Mt. Pinos. The various races are known locally by several expressive and descriptive names, the most common of which are Blue Grouse, Gray Grouse, Pine Grouse, Pine Hen, and Fool Hen.

The Dusky Grouse is an inhabitant of coniferous forests from sea level to timber line wherever its favorite trees grow. It haunts great woods of fir, pine, and cedar, but seems to be most common on the edges of the timber and along the rare openings near the streams. Here in a quiet glade, where the stream glides under a natural bridge formed by a giant fallen tree, along the moss-grown trunk of which wild beasts have worn a narrow pathway, the Blue Grouse woos his mate. Mounted perhaps upon a fallen log, he struts about with tail erect and drooping wings. Now his neck puffs and swells, the feathers on its sides spreading and turning outward, their light inner surfaces exposed, forming white rosettes with a great red inflated air-sac showing in the center, and so he blossoms to the sight of his waiting mate, watching among the ferns. The comb-like fiery wattles above his eyes distend as he struts toward her, bows low, and deflates the air sacs, expelling the air with a deep *boom boom boom*. This, like similar sounds produced by other Grouse, is more or less ventriloquial, and seems almost as loud at a considerable distance as when close at hand. When it is uttered, as is sometimes the case, from a limb among the dense foliage the concealed bird is very difficult to discover.

The love season over, and the eggs laid, the female retires and becomes imperceptible, so closely does she resemble her surroundings, as she sits motionless on her crude ground nest, which is placed often in the open near the timber, sometimes beneath a log or bush. Here, secure in her invisibility, she sits until almost stepped upon; for the moment she leaves the nest the eggs become conspicuous, and she seems to lack the artifices that the Ruffed Grouse employs to lead the disturber away, though sometimes she does her best. Mrs. Irene G. Wheelock asserts that the male also attends and guards the young, but this is an exceptional habit among American Grouse. In autumn when the young birds are grown the individuals of each family remain together.

In the wilderness, where this Grouse seldom has been hunted, it barely moves out of the hunter's path, and, if flushed, merely hops or flutters into the lower branches, turning its head from side to side and regarding the disturber of its peace with innocent wonder, hence the name Fool Hen; but if hunted much it soon becomes "educated" and its habits then are more like those of the Ruffed Grouse under similar conditions although it is more likely to take to tall trees.

There is some mystery about where the Dusky Grouse spends the winter. After the snow is deep, however, it is believed that the birds stay day and night in coniferous trees where they find shelter and food among the heavy foliage which, resinous and unpalatable though it is, forms the principal part of their sustenance, while the rain and snow falling on the trees give them all the water they need. If this is the case, however, it would be interesting to know how they get gravel to assist in digesting their food or what they substitute for gravel when that is unobtainable. Keen-eyed Indians on snowshoes, in the dead of winter, have little trouble in finding and killing these birds on the trees. Now and then a Grouse flies down to the surface and writes his autograph on the snow and they are said to burrow into the drifts as the Ruffed Grouse does, and sleep there, but little is known about their winter habits. The Dusky Grouse is a bird that deserves a better acquaintance. It is well worth knowing.

EDWARD HOWE FORBUSH.

The Dusky Grouse are mountain as well as forest-loving birds, and they often wander from the spruce and fir forests above the timber line in their search for berries and other food. In winter they descend to the valleys. They are not migratory, such movements being made solely in search of food and to escape the severe weather of the higher altitudes. The food of the Dusky Grouse consists of insects, which form a large part of the food of the young birds, grasshoppers being the principal insect eaten, and fruits, seeds, and leaves.

Like the Spruce Grouse, the Dusky Grouse is a browser and is one of our chief foliage-eating birds. Dr. Judd says it spends most of its time in pine forests feeding on needles, buds, and flowers. In the summer many berries are eaten, among them the abundant wild gooseberries, currants, strawberries, huckleberries, and bear-berries. The flesh is white, tender, juicy, and delicious. Later in the season it is affected by the change in diet and it often has then a bitter and resinous taste which renders it highly undesirable.

HUDSONIAN SPRUCE PARTRIDGE

Canachites canadensis canadensis (*Linnæus*)

A. O. U. Number 298 See Color Plate 41

Other Names.— Canada Grouse; Black Grouse; Wood Grouse; Wood Partridge; Spotted Grouse; Cedar Partridge; Swamp Partridge.

General Description.— Length, 17 inches. Males are black and gray above, and black below, variegated with white; females are brown, tawny, and black above, and dull-whitish below, barred with black. Both sexes are without crests or ruffs; tarsus feathered to the toes; tail with 16 feathers.

Color.—Adult Male: Plumage of entire upper parts, wavy-barred with black and gray; some rufous markings on back and wings; white markings on shoulders and wing-coverts; lores, whitish; throat and sides of head below eye, black bordered with broken white; a bright yellow or reddish-colored comb over eye of naked skin; *tail, black broadly tipped with orange-brown;* under parts, deep glossy black much variegated with white; under tail-coverts tipped with white; sides and breast with white crescented bars. Adult Female: Entire upper parts, umber brown varied with tawny and ocher and traversely barred with black; lores and a short streak behind eye together with an obscure patch on side of throat, whitish; beneath, dull whitish much mixed with tawny particularly on breast; nearly everywhere wavy-barred with blackish; shorter in front, more heavily behind; flanks, streaked

Drawing by R. I. Brasher

HUDSONIAN SPRUCE PARTRIDGE (½ nat. size)

The champion fool among birds

with white; tail mottled with buff and tipped very narrowly with orange-brown.

Nest and Eggs.— NEST: On the ground, well-concealed under low conifer branches, brush heaps, or tamarack; constructed of dry twigs and leaves and lined with moss and grass. EGGS: 8 to 14, buffy or reddish-brown, blotched and spotted with different shades of darker brown.

Distribution.— From the eastern base of the Rocky Mountains west of Edmonton, Alberta, east to Labrador Peninsula; also a disconnected area in Alaska from Bristol Bay to Cook Inlet and Prince William Sound.

There is no such bird as the Spruce Partridge. It is the Spruce Grouse (*Canachites canadensis*); but it is called Spruce Partridge in common parlance to distinguish it from the Birch Partridge (Ruffed Grouse) and ornithologists have adopted the popular misnomer, well knowing it to be incorrect. In recent years this Grouse has been divided into three races or subspecies, differing slightly in plumage but hardly any in habits. The races are: (1) Hudsonian Spruce Partridge (*Canachites canadensis canadensis*), (2) Alaska Spruce Partridge (*Canachites canadensis osgoodi*), and (3) Canada Spruce Partridge (*Canachites canadensis canace*). These three races (each in its allotted place) inhabit most of the wooded regions of Canada and Alaska except southern British Columbia, Alaska, and central Alberta, where another species, Franklin's Grouse (*Canachites franklini*), takes their place.

The Spruce Partridge is a bird of the northern wilderness. Only one of the three races of *Canadensis* ever reaches the United States, and that one, the Canada Spruce Partridge, touches only a few of the northern States, in most of which it is now nearly or quite extinct. The Spruce Partridge is a dweller in dark spruce woods and tamarack swamps, north into boreal regions, probably as far as its favorite trees extend. The extermination of the southern race over much of its range in the United States is a blot on our history, as the bird always was harmless and interesting. It is hardy and fearless. It is too confiding, however, to exist in the neighborhood of civilized man — the most bloodthirsty and destructive of all animals. In the mating season the male struts about with bristling feathers, head, neck, and tail raised, tail expanded and body held level. The drumming is not done exactly like that of the Ruffed Grouse, but the bird performs by beating the air with its wings as it climbs up a leaning tree trunk, or else it flies from the ground, sometimes nearly to the tree tops, often only a few feet in air, and drums suspended with beating wings.

In its native wilds this bird exhibits the most charming confidence in mankind. The hunters know it as the champion fool among birds. The Indian boy shoots it with a blunt-headed arrow or even knocks it down with a stick as it walks by unconcernedly or sits on a limb regarding the intruder with happy curiosity. Full-grown birds have been caught in the hand or beheaded with a switch. The hunter meets a brood in the trail and they merely step aside and watch the passer with a sort of affectionate regard. As civiliza-

Photo by H. E. Anthony

SPRUCE PARTRIDGE

A bird of the northern wilderness

tion approaches, the Spruce Partridge disappears, for man destroys every wild creature that confides in him. If any escape they learn by experience, but the Spruce Partridge is too slow to learn. There is little excuse for killing it as the flesh is dark and unpalatable, having a strong flavor of spruce and fir foliage which forms a great part of its food. In summer it feeds more or less on insects and berries and, as the flesh is improved in flavor by this diet, the bird is hunted most then and in early autumn when the young are at their best. Its only possible chance for salvation is its residence in the northern wilderness where white men are few and far between.

EDWARD HOWE FORBUSH.

FRANKLIN'S GROUSE

Canachites franklini (*Douglas*)

A. O. U. Number 299

Other Names.— Franklin's Spruce Grouse; Fool Hen; Mountain Grouse; Wood Grouse; Tyee Grouse.

Description.—Adult Male: Size, shape, and color of the Hudsonian Spruce Partridge; tail, longer and more even with broader feathers, but *without terminal orange bar;* its upper coverts broadly tipped with pure white. Adult Female: Differs from the female Spruce Partridge in having the tail-coverts white tipped and tail tipped with white instead of orange-brown; otherwise the birds are indistinguishable.

Nest and Eggs.— Nesting habits, and number and color of eggs are similar to those of the Spruce Partridge.

Distribution.— Southern Alaska, central British Columbia, central Alberta, south to Oregon, Idaho, and Montana.

The popular name "Fool Hen" is applied to the Franklin's Grouse and various other species of northern Grouse, and to other species of gallinaceous game birds, who fail to act promptly on the well-known fact that the average man will murder them on sight. This misplaced confidence by the Franklin's Grouse persists in a degree which is almost incredible. Often, a flock of them feeding on a trail will do no more than step aside as the destroyer approaches, or if they actually take to their wings they will perch in nearby trees, and regard their enemy with friendly curiosity, declining to move even when their confidence is rewarded by a volley of sticks and stones. George Bird Grinnell records an instance of one bird who sat quite still on a limb while a man shot at him several times with a rifle. The man was a bad shot but finally a bullet cut a foot off the Grouse, whereupon the bird simply shifted its weight to the other foot, and continued to sit still until the marksman was at last successful. Indeed it seems quite hopeless that this Grouse will ever become a real game-bird, which is to say, a bird who flies for his life at the distant approach of man.

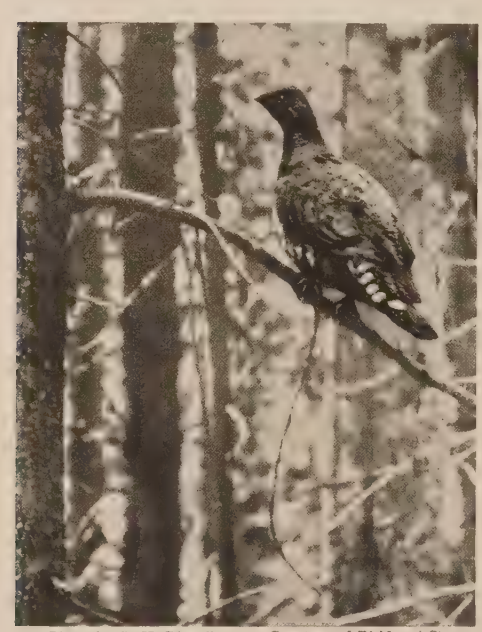


Photo by T. H. Riggall Courtesy of *Field and Stream*

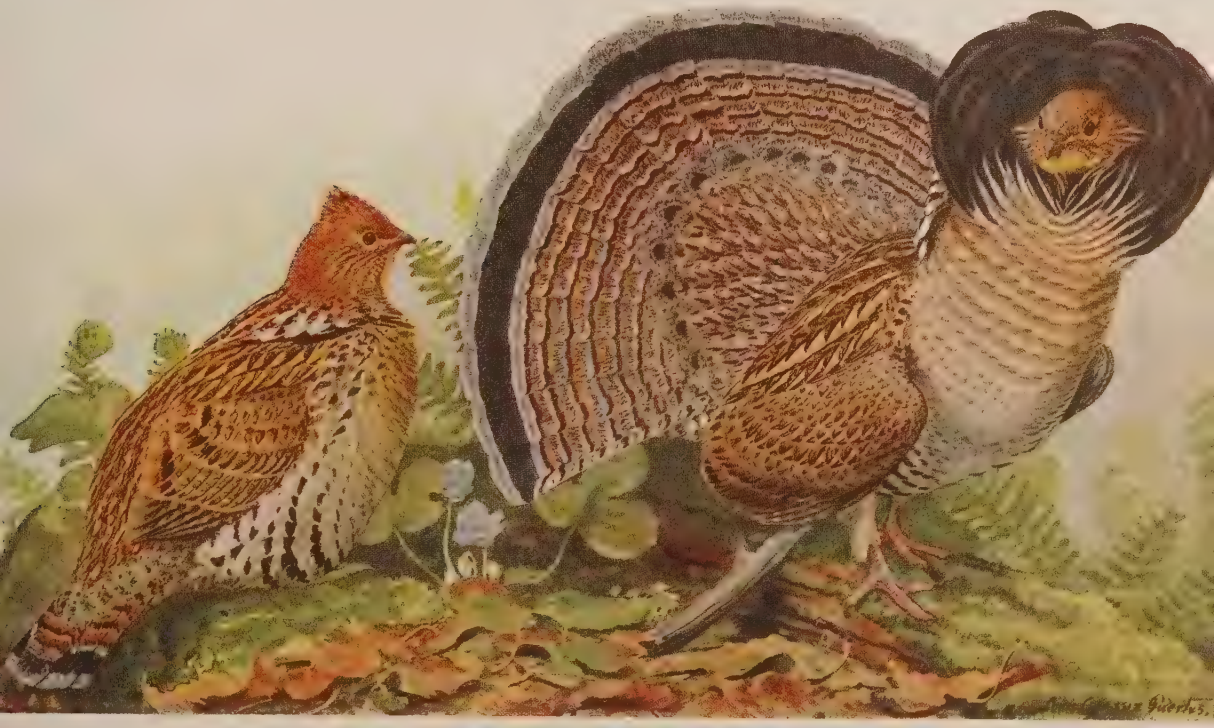
FRANKLIN'S GROUSE

Regarding its enemy with friendly curiosity

The strutting of this Grouse is an elaborate and rather amusing performance. It involves much prancing about, during which the bird distends his red eyebrows until they nearly meet over the crown of the head, meanwhile spreading his tail to its utmost width, then closing half of it on one side and half on the other, alternately, these movements being accompanied by a sound like the rustling of silk. The plumage of this species resembles that of the Hudsonian Spruce Partridge.

The Franklin's Grouse was first described by Lewis and Clarke in the report of their exploring expedition to the Pacific coast in 1804–1806. But, despite the fact that the bird has been known for over a century, comparatively little is known of its nesting habits. From the few records available, these habits do not differ from those of the Spruce Partridge.

Courtesy of the New York State Museum



CANADA SPRUCE PARTRIDGE *Canachites canadensis canace* (Linnaeus)

MALE AND FEMALE

$\frac{2}{3}$ nat. size

RUFFED GROUSE *Bonasa umbellus umbellus* (Linnaeus)

FEMALE

MALE, STRUTTING

$\frac{1}{4}$ nat. size

RUFFED GROUSE

Bonasa umbellus umbellus (*Linnæus*)

A. O. U. Number 300 See Color Plate 41

Other Names.— Grouse; Shoulder-knot Grouse; Partridge; Drumming Grouse; Birch Partridge; Pheasant; Drumming Pheasant; Mountain Pheasant.

General Description.— Length, 18 inches. Color above, reddish-brown, spotted; below, yellowish, barred with dark. Both crested and ruffed; tail and wings of equal length; tail with 18 broad, blunt feathers, and somewhat double notched, so that it is nearly half-diamond shape when spread; tarsus partly feathered in front.

Color.—Adults: Lores, cream; crown, variegated black, brown, and yellow; nape more softly blended with gray and reddish-brown; back and shoulders, cinnamon-rufous, each feather with a broad yellowish-white center stripe, this stripe mottled on both sides with brownish-black; lower back, rump, and upper tail-feathers, tawny-brown mixed with gray, speckled with heart-shaped spots of yellowish-white; *tail, warm brown or grayish-ash,* crossed with six or seven narrow bands of blackish-brown, the subterminal one much wider, the feathers tipped with whitish; throat, dull ocher; rest of under parts, whitish tinged with pale brown or pale yellow; the breast, narrowly but boldly crossed with traverse bars of burnt umber or sepia, sides and abdomen with large traverse wedge-shaped spots of dusky and brown, under tail-coverts and thigh-feathers faintly marked or immaculate; ruff, purplish-black; wing-coverts, a warm brown or cinnamon with a narrow shaft streak of white; secondaries and primaries, dusky, the former edged and tipped with yellowish-white, the outside webs of latter with a number of elongated spots of yellowish white. Young: Similar to adult.

Nest and Eggs.— Nest: On the ground, in thickets, dense underbrush, on the borders or in large woods, alongside of a log or at the base of a large tree; constructed of old leaves, a few feathers, weed stems, grass, and roots. Eggs: 6 to 15, usually 10 or 12, varying from whitish through cream to a pale brown, usually without spots but sometimes lightly speckled with shades of brown.

Distribution.— Eastern United States from Minnesota, Michigan, southern New York, and southern Vermont south to eastern Kansas, northern Arkansas, Tennessee, and Virginia, and in the Alleghenies to northern Georgia.

The bird called Partridge or Birch Partridge in the North and Pheasant in some of the middle and southern States is really a typical forest Grouse. It is a hardy dweller in rough, cold lands. Dark forests, rocky mountain sides, deep thickets, and sheltered swamps are its favorite hiding places in summer or winter. It likes the dim and silent woods, far from the haunts of man, but will tolerate his presence if only he leave intact the stately trees; it is no lover of open plains and where the woods are destroyed it soon disappears.

Most country boys in the northern United States well remember their first experience in the woods with this brave and hardy bird. No sound of the forest is more startling than the sudden thunderous roar of beating pinions with which it rises, sometimes almost from under foot, scattering the fallen leaves like a little whirlwind, tearing its way through rustling leaves and bending twigs, winning distance and concealment in one breathless instant. A stirring dash, a swirl of leaves and it is gone, leaving the slow, blundering human biped startled and staring with open mouth and fast-beating heart. It is not necessary for this Grouse to rise with such bluster for it can fly and alight as quietly as most birds, but the sudden whir speaks eloquently of fear and is the bird's method of escaping quickly, confounding its enemies, and sounding the alarm to its companions in danger. Often the swift bird escapes before the startled gunner has fairly caught sight of it.

The four recognized races of this Grouse — the Ruffed Grouse (*Bonasa umbellus umbellus*), the Canada Ruffed Grouse (*Bonasa umbellus togata*), the Gray Ruffed Grouse (*Bonasa umbellus umbelloides*), and the Oregon Ruffed Grouse (*Bonasa umbellus sabini*) — extend the range of the species over much of the wooded regions of the United States and Canada and it is known more widely than most other game birds, but its habits can hardly be said to be so well known, as wherever it is much hunted it becomes extremely shy and suspicious, and some of its ways are, even now, the subject of dispute. Probably no one man has lived long enough to learn all its wiles. Its wildness in settled regions is the more remarkable when we realize that when the first explorers came to this country this Grouse had so little fear of mankind that it would sit on a low limb gazing curiously at the intruder and could be killed with a stick. Only a few years ago in the great un-

trodden forests of British Columbia I found it similarly unsuspicious. The young when reared artificially from the egg are so tame that they are in danger of being trodden underfoot. Fortunately the bird has so capable a brain that a brief experience with the "man behind the gun" serves to "educate" it and if it survives its first few experiences with flying shot it becomes quite another bird.

It is only the solitary woodsman that is likely to observe the habits of the Ruffed Grouse. He who has learned the art of sitting quietly on a log or waiting patiently in the cover of the thickets may gradually come to know many of its ways. Its drumming is one of the commonest sounds of the woods. Under favorable circumstances the sound will carry a mile. Yet many have never been conscious of hearing it, few have ever actually seen the performance, and to this day those who have watched the birds drum in confinement are in dispute as to whether the sound is made by the wings striking the air or the feathers of the breast. The sound serves three purposes: first, as a call to the female, second, as a challenge to combat; and third, as an expression of the abounding vigor and vitality of the male. It serves the first purpose admirably, as probably all the females within hearing come to the sound if they hear no other drummer, for the Ruffed Grouse is a polygamist and has been observed to mate with two or more females within a few minutes. The second purpose is served when one drummer approaches another's station, for then a fight is likely to ensue until one or the other is whipped and driven away. The third purpose apparently is the only one served in the autumn, when the mating season is over and when the birds drum as a healthful exercise to expend their surplus energy.

Drawing by R. I. Brasher

RUFFED GROUSE (½ nat. size)

Its experience with man has taught it to be suspicious and shy

It seems, at first sight, very unfortunate that Grouse nest on the ground where their nests are easily accessible to the prowlers of the forest, but if they built in trees, which they almost never do, their large nests would be conspicuous and readily seen by their enemies. The sitting bird covers her eggs, and so closely does she resemble her surroundings that even the keen-eyed Hawk passes her unawares. Also she seems to leave no scent at nesting time, for trained pointer and setter dogs have been unable to find a mother bird on the nest so long as she remained motion-

less. Often the nest is sheltered under log, stump, or tree, sometimes near the den of the fox, often near that of the skunk; but these prowlers seem to find it only if they fall upon it by accident, thus starting the bird, or if they see her enter or leave it. When the fox blunders on her retreat she bristles up and flies directly at his head. This startles him but does not divert him and his mouth is soon full of scrambled eggs.

The little ones with their pipings and flutterings would not long be safe in their lowly nest and so they leave it as soon as the natal down is dry and thenceforth become wanderers on the face of the earth. They do not stray far from

Photograph by H. K. Job Courtesy of Outing Publishing Co.

RUFFED GROUSE ON NEST

the neighborhood, but patter about day by day, and gather under the mother's wings wherever night overtakes them. She is ready to defend them with her life, if need be, or to entice away any enemy by crying and fluttering in the path like a wounded bird. This ruse often is successful with a boy or a dog, but does not deceive Reynard, who quietly retires, lies down to await the mother's return, and, when the chicks rise from their concealment at her call, springs among the frightened brood and marks one for his own.

In feeding, the little ones scatter through the woods, searching for insects on the forest floor or jumping and fluttering up to the overhanging foliage in search of their elusive prey, while the mother follows, watchful for any enemy that may be upon the trail. In about a week from the time they leave the egg the chicks can use their wings and within three weeks, though still no larger than very small chickens, they have learned to fly considerable distances and to rise quite high in air.

As their feathers grow they learn first to sleep on the ground in a circle about the mother and next to roost in shrubs and trees. As the summer wanes the growing birds make dusting places in dry spots along wood roads or southerly hillsides where they wallow and dust their feathers in the manner of a domestic fowl, to free themselves of parasites.

When autumn comes they are nearly full-grown but their numbers have decreased about one-half as they have many enemies. Now they visit the wild apple trees and grape vines or search for beechnuts and acorns among the fallen leaves. About the middle of October they begin to wander about and often are found dead in queer places where they have flown against some obstacle such as a high wire fence or the side of a building. This is the unexplained

"crazy season." They are now preparing for winter, laying in stores of fat, growing a long downy covering for body and legs and putting on their snowshoes, which consist of little horny comb-like appendages that grow from the sides of the toes to help support the weight of the body on the snow.

Now comes the hunting season, when the bird has need of all its wits. Its many wiles and stratagems are known more or less to the hunter. Commonly upon rising it goes behind a tree trunk or some thick foliage and keeps this between itself and its pursuer. Often it doubles upon its trail, circles, and lies close until the hunter has passed, rising behind him and getting safely away. Sometimes it flies rapidly out of sight but alights high in some tall, thick pine where it remains motionless until the coast is clear, and so, in one way or another, a few birds manage to survive the season and then they face the winter. As the inclement season comes on, they leave the heights and come down into the more sheltered valleys and swamps where they subsist on buds, foliage, twigs, and dried berries until vernal breezes blow and nature calls them again to the mating. EDWARD HOWE FORBUSH.

The Ruffed Grouse can be kept plentiful even in closely settled farming regions, provided small woods or thickets be left or are planted, and foods suitable for different seasons of the year are provided. Young birds are largely insectivorous. More than 95 per cent. of the diet of the young Grouse examined by Dr. Judd was insects. Newly hatched chicks eat the most; as they grow older they eat fruit, and later they feed on mast, grain, and buds. The study of the food habits of the young has not been as extensive as it should be, but it indicates that the chicks eat grasshoppers, cutworms, certain beetles, ants, parasitic wasps, buffalo tree-hoppers, spiders, grubs, and caterpillars. Undoubtedly many small insects and their eggs which are found in the woods and adjacent fields will be added to the list. The beetles seem to be preferred, but Dr. Judd says the Grouse he shot in September, in New Hampshire, were feeding largely on red-legged grasshoppers, which were abundant in the pastures where the birds foraged. The vegetable food consists largely of seeds, fruit, buds and leaves. Mast, including hazelnuts, beechnuts, chestnuts, and acorns, are staple foods, the acorns being the largest supply in many regions. Acorns of the scrub oak, scrub chestnut oak, white oak, and red oak are swallowed whole. The Ruffed Grouse undoubtedly eats grain and often procures it along woodland roads, where it resorts to dust and to feed on the abundant berries.

More than one-fourth of the yearly food of this bird is fruit. Its diet includes the hips of the wild rose, grapes, partridge berries, thorn apples, wild crab apples, cultivated apples, wintergreen berries, bayberries, blueberries, huckleberries, blackberries, raspberries, strawberries, cranberries, sarsaparilla berries, and others, wild and cultivated cherries, plums, haws, sumacs, including the poison sumac and poison ivy, which are taken with immunity.

Sportsmen are well aware of the fondness of this Grouse for wild grapes and apples, and they often find them in places where grapes are plentiful and in old fruit orchards, especially on abandoned farms. The wild rose-hips and sumac are excellent winter foods because they can be obtained above the snow. Wild and cultivated sunflowers furnish excellent food, and many other fruits and seeds of varying importance are on the Ruffed Grouse's bill of fare.

Birch, poplar, willow, laurel, and other buds are eaten by the Ruffed Grouse, and the budding, practiced for the most part during the winter, enables it to survive the severe winters of the northern States and Canada, when other foods are buried in deep snows. The several species of birch buds are a staple.

WILLOW PTARMIGAN

Lagopus lagopus lagopus (*Linnæus*)

A. O. U. Number 301

Other Names.— Ptarmigan; Common Ptarmigan; Willow Grouse; White Grouse; Snow Grouse.

General Description.— Length, 17 inches. In summer males are brownish-rufous above, barred with black, and white below; females are tawny-brown, above and below, barred and spotted with black. In winter both sexes are white. The feet are completely feathered, the tail has 14 feathers, and the tail-coverts reach to the end of the tail.

Color.—ADULT MALE IN SUMMER: Head, neck, and

breast, rich chestnut or cinnamon-rufous, top of head spotted with black, chest and neck with bars of the same color; entire upper parts except wings, more brownish-rufous, broadly and closely barred with black; most of the wings and rest of the under parts, white. ADULT FEMALE IN SUMMER: Entire plumage except wings, tawny-brown, heavily spotted and barred above, and uniformly barred below with black. ADULTS IN WINTER: Snowy white; *tail-feathers, black tipped with white;* middle pair with tail-coverts which extend to end of tail, white.

Nest and Eggs.— NEST: A mere depression in the ground, lined with leaves, grass, or feathers. EGGS: 7 to 12, varying from pale yellowish to dark chestnut-brown, heavily spotted with rich browns and black.

Distribution.— Arctic regions; in America breeds from northern Alaska, northern Banks Land, and central Greenland south to eastern Aleutian Islands, central Mackenzie (in the mountains to west-central Alberta), central Keewatin, James Bay, and southern Ungava; south in winter to northern British Columbia, Saskatchewan valley, Minnesota, Ontario, and Quebec; accidental in Wisconsin, Michigan, New York, Maine, and Massachusetts.

The extreme northern portion of the northern hemisphere is the summer home of the Willow Ptarmigan. Here, often well above the tree line on the boundless moss-covered tundra where the ground thaws only to a depth of a few feet, the student may seek for this bird. The rich chestnut-brown plumage in no way renders it conspicuous in summer and in winter when all the region about it is perpetually white, the Ptarmigan has a coat as white as the snowy wastes it inhabits. From seven to twelve spotted eggs are laid in the simple grass- or feather-lined nest on the ground. One observer states that all the coloring matter can so be washed from a freshly laid egg that only the pale creamy white of the shell is left.

The male of many of the Gallinaceous birds, not content with one mate, gathers unto himself several helpmates. The male Willow Ptarmigan, let us record, is not one of these polygamous individuals. He has only one mate and for her sweet sake he wages furious battles in spring with other covetous blades of the frozen wastes. For her he undergoes punishment and loses many feathers. So frequent and so furious are these battles that apparently few except the strong birds are able to win and be the proud head of a family. Such provision is doubtless wise in a country where the conditions of climate are certainly not ideal for bird-life. During the mating season the male is very noisy and his hoarse calls and hoots may be heard on all sides. The uproar reaches its greatest height between 10 P. M. and 2 A. M., this being the period of the twenty-four hours when there is less daylight, and doubtless takes the place of the dawn which birds farther south are fond of making resonant with their songs.

The Willow Ptarmigan is migratory and after the breeding season retires southward as far as Sitka in south Alaska, and the central British provinces. A few have even been known to wander to the northern edge of the United States.

The food of this bird in summer consists of various insects and herbs. In autumn it finds many berries and in winter it appears to subsist almost entirely on the buds and terminal twigs of the dwarf alder and willow that flourish in bush-grown gullies of the tundra.

Ptarmigans constitute a popular article of diet with the human inhabitants of the Far North. A method at times employed in hunting them is thus described by Mr. E. W. Nelson:

"At the Yukon mouth on the evening of May 24, these Ptarmigans were uttering their hoarse notes all about. As we were sitting by the tent my interpreter took my rifle and going off a short distance worked a hump of snow to about the size of one of these birds. Fixing a bunch of dark-brown moss at one end of the snow to represent the bird's head, he set his decoy upon a bare mossy knoll; then retiring a short distance behind the knoll he began imitating the call of the male until a bird came whirring along, and taking up the gauntlet lit close by its supposed rival and fell victim to the ruse."

T. GILBERT PEARSON.

Allen's Ptarmigan (*Lagopus lagopus alleni*) is similar to the Willow Ptarmigan, having the same seasonal variations, but in all plumages the primaries are usually mottled with fuscous or have some fuscous along the shaft. It occurs on the rocky barrens of Newfoundland and feeds on seeds and berries.

ROCK PTARMIGAN

Lagopus rupestris rupestris (*Gmelin*)

A. O. U. Number 302

Description.—Length, 15 inches. ADULTS IN SUMMER: Entire plumage with the exception of wings and tail, which are white, brownish-yellow barred with blackish-brown; the lower parts of the male, except breast and sides, white. ADULTS IN WINTER: Pure white, *the tail black and a black stripe from the bill to eye and behind it.* IMMATURE IN FIRST WINTER: Similar to adult female in winter.

Nest and Eggs.—Nest and location similar to the Willow Ptarmigan. EGGS: 6 to 10, indistinguishable from those of the Willow Ptarmigan.

Distribution.—Arctic America; breeds from Melville Island to Melville Peninsula and south on the Barren Grounds from Alaska to Ungava; also above the limit of trees south to central Yukon; south in winter to southern Mackenzie and southern Ungava.

The habits of the Rock Ptarmigans are much like those of their relative, the Willow Ptarmigan, though they are not such prolific breeders. During the nesting season their coloration so closely resembles that of their surroundings that they are unlikely to be discovered except by accident. Like other birds which build on the ground, they seem to be aware of this fact, and will let an intruder almost tread upon them without stirring.

The Rock Ptarmigan is common on the mainland of Alaska where it is to be found chiefly on high ground in the summer months, whence it is driven into the valleys by the fierce winter storms.

The scientists recognize six variations of this species; they are: Reinhardt's Ptarmigan (*Lagopus rupestris reinhardi*), Nelson's Ptarmigan (*Lagopus rupestris nelsoni*), Turner's Ptarmigan (*Lagopus rupestris atkhensis*), Townsend's Ptarmigan (*Lagopus rupestris townsendi*), the Adak, or Chamberlain's, Ptarmigan (*Lagopus rupestris chamberlaini*), and Dixon's Ptarmigan (*Lagopus rupestris dixoni*).

Photos by I. S. Howe

Courtesy of Nat. Asso. Aud. Soc.

ROCK PTARMIGANS

These pictures were taken Christmas Day on Turkey Creek, near Morrison, Colorado: they are a good illustration of the protective value of the dress of the Ptarmigans; the shadows on the snow can be seen at a greater distance than can the birds

WHITE-TAILED PTARMIGAN

Lagopus leucurus leucurus (*Swainson*)

A. O. U. Number 304

Other Names.— Mountain Quail; Snow Grouse; Rocky Mountain Snow Grouse; White Quail.

Description.— Length, 13 inches. Entire foot feathered; tail less than ⅔ length of wing; tail-coverts reaching to end of tail. ADULTS IN SUMMER: Tail, most of wing, and lower parts from breast, pure white; rest of plumage, finely marked with grayish-brown, white, and black, varying with almost every specimen. ADULTS IN WINTER: *Entirely snow white;* bill, black. YOUNG: Tail, gray.

Nest and Eggs.— NEST: On ground in open situations; sometimes a mere depression in the ground, at others, quite a well-built structure of grass, leaves, and weed stalks, lined with feathers. EGGS: 10 to 16, pale buffy or light rusty-brown spotted or marbled with small dots or burnt-sienna over entire surface.

Distribution.— Rocky Mountains from northern British Columbia and central Alberta south to Vancouver Island, Washington, northwestern Montana, Colorado, and northern New Mexico.

It was on Piegan Pass in Glacier National Park, Montana, that I first saw the White-tailed Ptarmigan. An hour before we had left the tree line behind and had since been climbing steadily. Snow fields were all about us and beds of heather were abundant, in fact it was clear that we were now in the heart of the Ptarmigan country. We had all but reached the summit when suddenly, within thirty feet of the trail and almost on a level with my eyes, as I sat on my horse, a Ptarmigan appeared with five young. Their color matched their surroundings so nearly that had they elected to sit still no eye in the party would have detected them. A low clucking call from the mother bird was the only sound we heard. She exhibited no uneasiness and made no move to leave. Twenty minutes later, when a halt was made and some of us walked back with our cameras, the little family was still in the same place, and readily allowed themselves to be photographed at a distance of twelve feet. Here on these Alpine heights the Ptarmigan lives, with the Rosy Finches and the Pipits for its neighbors.

In winter when all the world the Ptarmigan knows is covered deep in snow, we find that nature has also worked a miracle with the bird, for then its plumage is of snowy whiteness. In few birds is protective coloration exhibited to such an extent as in these Ptarmigans that live along "the top of the world."

T. GILBERT PEARSON.

Photo by Nelson W. Logue — Courtesy of Nat. Asso. Aud. Soc.

WHITE-TAILED PTARMIGANS IN SUMMER PLUMAGE

Male — Female

Taken July 14, 1905, at Willow Lake, Colorado, above the timber line, elevation 11,500 feet. All the white is snow

PRAIRIE CHICKEN

Tympanuchus americanus americanus (*Reichenbach*)

A. O. U. Number 305

Other Names.— Prairie Hen; Pinnated Grouse; Prairie Grouse.

General Description.— Length, 18 inches. Color above, yellowish-brown, spotted with black; below, white barred with dusky-brown. Tail, short, rounded, and with 18 feathers; tarsus, feathered to base of toes; toes, webbed at base; a tuft of narrow, stiff feathers about 3 inches long on each side of neck overlying an area of bare skin; head with a slight soft crest. Neck tufts of female much smaller and less conspicuously colored.

Color.—Adults: Plumage above, yellowish-brown much broken by broad traverse spots or irregular bars of deep black, this color in excess of lighter tints; forehead, crown, and sides of head, deep buff; crown, much mottled with black and brown spots; a stripe from gape, beneath the eye, to nape, plain brownish-black; primaries and tail, plain dusky, the former with round spots of pale ocher on outer webs; tail, narrowly tipped with white; throat, plain buff bounded by a streak of dusky above, thus two stripes on side of head; rest of lower parts, dull whitish, everywhere barred with numerous sharply defined bands of dusky-brown; neck-tuft, rusty and pale buff at the neck, shading into deep black at ends.

Nest and Eggs.— Nest: On the ground in open prairie country, sheltered by grass tufts or bushes, or exposed; a slight hollow in the soil, thinly lined with grass and a few feathers. Eggs: 8 to 12, light drab or dull buffy usually unmarked, sometimes lightly sprinkled with brown.

Distribution.—Southeastern Saskatchewan and southern Manitoba to eastern Colorado, northeastern Texas, Arkansas, western Kentucky, and Indiana; probably extinct east of Indiana but formerly reached southwestern Ontario, Michigan, and northwestern Ohio.

The Prairie Chicken or Grouse, including the somewhat smaller form, Attwater's Prairie Chicken (*Tympanuchus americanus attwateri*), which is found in Texas and Louisiana, still occurs, in sadly diminished numbers, from Manitoba, Michigan, and Indiana to Texas and westward to the Great Plains where, as in the Dakotas, it has extended its range with the advancement of civilization. The Prairie Grouse weighs about two pounds and its flesh is tender, juicy, and delicious. Some prefer it to the flesh of the Ruffed Grouse. It certainly is a magnificent wild food bird and well worth preserving.

Grouse cannot stand the ordinary destruction by natural enemies and the destruction by guns at the same time. Since the birds continued to vanish after shooting had been prohibited, it is evident that there are other causes for this besides shooting. The destruction of their foods and covers is sufficient to account for the loss. Cats, rats, and roving dogs in many places prevent any increase in their numbers. Prairie fires and floods often exterminate them on large areas. The same may be said of the Sharp-tailed Grouse, and of the Prairie Chicken of the northwestern States which once was plentiful as far west as California; this bird has suffered, also, from loss of its food and covers. The prairie grasses, the wild rose, the wild sunflower, and many other food plants often are absolutely destroyed on the big wheat farms where these birds formerly were abundant and where they are now extinct or nearly so. In addition to food the briers afford safe protection when a Hawk or other enemy approaches. If we give their natural enemies a good chance to eat them, by destroying the Prairie Chickens' nesting sites and covers, and if we destroy absolutely their winter foods on vast areas, we must not expect the birds to return to places from which they have been extirpated merely because we have enacted laws prohibiting shooting.

In explanation of the picture, "The Love-making of the Prairie Chicken," Dr. Frank M. Chapman writes: "On frosty spring mornings, as the sun rises over the prairies, one may at times hear a singular, resonant, booming note, *boom-ah-b-o-o-m, boom-ah-b-o-o-m.* It is the love-song of the Prairie Hen. He may be near at hand or possibly two miles away, so far does this sound, unobstructed by tree or hill, carry in the clear air. It is well worth following, however, for we may find the maker of it, with perhaps ten to fifty of his kind, engaged in a most remarkable performance. During the mating season, from March until early in May, the Prairie Hens of a certain district or area gather before daybreak to take part in these courtship demonstrations. The feather-tufts on either part of the neck are erected like horns, the tail raised and spread, the wings drooped, when the bird first rushes forward a few steps, pauses, inflates its orange-like air-sacs, and with a violent, jerking, muscular effort, produces the startling

Photograph of habitat group

Courtesy of American Museum of Natural History

THE LOVE-MAKING OF THE PRAIRIE CHICKEN

During the mating season, the males of a certain area gather in the early morning and indulge in queer antics before the females, which are suggestive of a dance

boom, which we may have heard when two miles distant. At other times, with a low cackle, he springs suddenly into the air, as though quite unable to control himself, and finally he comes within striking distance of a rival who has been giving a similar exhibition. Then, with much clashing of wings, a fight ensues which often strews the nearby grass with feathers. These tournaments of display and combat are doubtless designed to arouse the attention of the females, but they also occur when only males are present. Within an hour or two after sunrise, the time varying with the ardor of the birds, the competition is over for the day and the rivals feed peacefully together, until they enter the lists the following morning."

The food habits of the Prairie Grouse are well known. They eat many insects, especially grasshoppers, from May to October, and are valuable aids to the farmer for this reason. In the fall and winter the food of the Prairie Grouse is mainly vegetable—fruit, leaves, flowers, shoots, seeds, and grain. Dr. Judd says: "Like the Bob-white and the Ruffed Grouse, the Prairie Grouse is fond of rose-hips, and the abundant roses of the prairie yield 11.01 per cent. of its food." In Kansas and many other States the wild sunflowers, goldenrod, and other natural foods were tremendously abundant, but throughout most of the range of the Grouse these foods have been destroyed absolutely. It would pay to restore some prairie grass, wild roses, sunflowers, and other covers and food which are essential to the bird's existence. No farmer or sportsman can be expected to give the land, time, labor, and money needed to save the Grouse simply as a bait for trespassers. This Grouse is fond of the stubble as a feeding ground and it can be made profitably abundant on many farms, but it must have winter foods and covers, and it must be protected from its enemies if any shooting is to be done; otherwise it will become extinct.

The Lesser Prairie Chicken (*Tympanuchus pallidicinctus*) occurs on the Great Plains, from Kansas south to west-central Texas; its plumage is similar to that of the Prairie Chicken but paler.

HEATH HEN

Tympanuchus cupido (*Linnæus*)

A. O. U. Number 306

Other Name.— Eastern Pinnated Grouse.

General Description.— Length, 17 inches. Color above, rusty-brown; below, rusty-white. Tarsus, lightly feathered to the toes; a tuft of less than ten stiff, pointed feathers on each side of the neck, overlying a naked area which is capable of being inflated to the size of a small orange; tail, short with eighteen stiff feathers.

Plumage.—ADULTS: Ground color above, rusty-brown; shoulders with white tips to the feathers; everywhere barred with even broad markings of blackish-brown, much narrower on neck and tending to spots on crown; below, rusty white, traversely barred with numerous reddish-brown bars, these darker bars much in excess of lighter ones; neck-tufts black. Sexes generally alike, but the female is sometimes darker, with bars beneath dull black and tail dark brown with many fine irregular rusty bars.

Nest and Eggs.— NEST: On ground; a depression, lined with grass, weed stems, and leaves. EGGS: 6 to 12, creamy to yellowish-green, unspotted.

Distribution.— Island of Marthas Vineyard, Massachusetts; formerly in suitable portions of New England, New York, and the Middle States.

The Heath Hen possibly was once a smaller eastern race of the Prairie Chicken, but, all connecting links having been destroyed, it now stands as a distinct species, having been set apart by William Brewster (*Auk*, Jan., 1885). No one knows how much ground this bird formerly occupied, but now it is confined to the island of Marthas Vineyard, Massachusetts, where the State Commissioners of Fisheries and Game are trying to save it from extinction. It is believed to have occupied formerly all suitable country along the Atlantic seaboard from Massachusetts to Virginia, but no one has any data regarding its western limit. Audubon and Wilson believed it to be identical with the Grouse that inhabited the barrens of Kentucky in their day, but possibly it did not range west of the Appalachians. It is recorded in numbers in the Connecticut valley in Massachusetts, but no records of its existence farther west in that State have been found.

It was numerous once in suitable localities

over its range, being so abundant in Boston that laborers and servants are said to have stipulated with their masters not to have it upon the table more than a few times a week. (Chamberlain, *A Popular Handbook of the Ornithology of the United States and Canada.*) It remained more or less common locally until after the year 1800, but between that time and 1869 it appears to have been exterminated from the mainland and to have been preserved on Marthas Vineyard only by special protection. Its numbers there dwindled until 1906 when a destructive fire swept over the breeding range and the number was reduced to less than fifty. Since then, under stringent protection, the remnant has so increased that the colony has been estimated (1916) at from five hundred to one thousand birds.

The Heath Hen or Heth'en, as it is called on Marthas Vineyard, is a bird of dry, sandy, scrubby plains, or barrens. It long occupied such regions in Massachusetts, Long Island, New York, and New Jersey and still prefers them in its last retreat on Marthas Vineyard, where it keeps mainly to the dry sandy plains in the interior which have been swept by fires for centuries and which now support a growth composed of scattering low pitch pines, scrub oaks, and other still smaller shrubbery. From this cover the birds make forays to the open farm lands, which they frequent more or less, to the shore, and more rarely to the woods, but in some parts of the island which are wooded with a good growth of oak and pine, the Heath Hen is rarely seen. Also it seems to be rare or practically absent in the western end of the island, which is largely a region of hilly pastures.

The habits of this bird are much like those of the Prairie Chicken. The booming of the males is not so deep in tone, but the wooing antics are much the same. The mother and her young sleep on the ground, but the males, and possibly also the females, often alight on the tops of small trees, and flocks have been known to alight and remain for some time on the roof of a farm house. This bird is believed to drink only rain or dew that it finds on vegetation. The Heath Hen feeds in spring and summer on grasshoppers and other insects, tender foliage, and berries. In winter it has to subsist largely on dried leaves, buds, and acorns, but it is fond of corn and peas and sometimes is destructive in gardens.

If the Massachusetts authorities continue to handle their problem wisely there is hope that the Heath Hen may yet be introduced and propagated under protection in other parts of its former habitat. EDWARD HOWE FORBUSH.

SHARP-TAILED GROUSE

Pediœcetes phasianellus phasianellus (*Linnæus*)

A. O. U. Number 308

Other Names.— Prairie Chicken of the Northwest; Northern Sharp-tailed Grouse; Spike-tail; Pin-tail; Pin-tailed Grouse; Sprig-tailed Grouse; White Grouse; White-belly; Black-foot; Sharp-tail.

General Description.— Length, 20 inches. Color above, yellowish-brown, sprinkled with black; below, whitish. *No tufts on side of neck,* but the patch of distensible skin is hidden; head, slightly crested; tarsus feathered to base of toes; toes with a fringe of horny processes in winter; tail, graduated and much shorter than wing with feathers square at tips and middle pair extending some distance beyond the others; middle tail-feathers of female shorter than those of male.

Color.— Head and neck, deep buffy; a dull whitish area on each side of neck and a whitish stripe behind eye; upper parts everywhere closely and evenly variegated with blackish-brown, dull chestnut, and grayish, these marks smallest on rump, reddish tones most pronounced on back, and the lighter colors everywhere sprinkled with blackish; wing-coverts, like back but each feather with a conspicuous rounded white spot; crown and back of neck also like back but smaller pattern, the bars mostly traverse; throat, light buff, unmarked; under parts, buffy-white toward throat, *clearer white below;* breast with numerous U- and V-shaped spots of dark brown; similar but smaller spots scattered over rest of under parts except on middle of abdomen; primaries, brownish; secondaries with square yellowish-white spots tipped with white, the inner ones varied with colors of back; four middle tail-feathers, also like back, others white on inner webs, mottled on outer; bill, dark horn-color, flesh-colored below; iris, light brown.

Nest and Eggs.— NEST: A hollow in the ground, lined with coarse grass and feathers. EGGS: 10 to 16, grayish-olive uniformly spotted with brown rarely larger than a pinhead.

Distribution.— Central Alaska and northwestern British Columbia east through central Keewatin to central-western Ungava, and south to Lake Superior and the Parry Sound district, Ontario; casual east to Saguenay River, Quebec.

The Sharp-tailed Grouse is commonly confused with the Prairie Chicken but most gunners recognize it at once by its acuminate tail and the absence of neck tufts. They designate it by such names as Sharp-tail, Pin-tail, Sprig-tail, Spike-tail, White-belly, etc.

The species formerly was known to naturalists as *Pediœcetes phasianellus,* the Sharp-tailed Grouse. It has been divided into three subspecies, differing chiefly in the shades of coloration. The Sharp-tailed Grouse is the more northern race which is confined to Canada and Alaska. This is a very dark bird with heavy, dark markings on the upper parts. The Columbian Sharp-tailed Grouse (*Pediœcetes phasianellus columbianus*) is much paler in tint, with the dark markings less conspicuous, and frequents the plains of the western region, from central British Columbia and central Alberta south to California, Utah, and Colorado, though now practically extinct in California. The Prairie Sharp-tailed Grouse (*Pediœcetes phasianellus campestris*) is native to the prairie regions of southern Canada and the northern United States. These races have similar habits except as they may be modified somewhat by differences of environment. Therefore a description of the habits of one race may be taken as typical of the species.

With the first promise of spring on the Great Plains the remarkable mating antics of the Sharp-tail begin. As a spectacle this erratic dance would furnish amusement to a Hottentot. The birds have a meeting place where they gather at the booming calls of the male at early dawn and again at sunset. At first they appear to be standing quietly, then one begins the dance by partly spreading its wings in a horizontal direction, lowering its head, raising and spreading its tail, distending the air-sacs and then, bristling up, runs across the floor of the meeting place, stamping its feet so hard and fast as to produce a drumming sound, uttering also what Ernest S. Thompson terms a sort of "bubbling crow," beating the air with its wings, and vibrating its tail with a low rustling sound. Immediately all join the dance. Some circle to the right, others to the left, passing each other stiffly, charging back and forth, bowing, squatting, and posturing. Faster and faster goes the dance; more and more madly swings the giddy whirl until the excited birds jump over the backs of

Drawing by R. I. Brasher

SHARP-TAILED GROUSE (½ nat. size)

This bird prefers thickets or the edges of timber

their companions, strut, swell, and even fight The performance resembles in some ways an Indian war dance and each bird seems to be anxious to make as much noise and show as possible. The dance goes on day after day until the mating season is over and often begins again in autumn.

The nest, usually placed in the open, shaded perhaps by grasses, weeds, or bushes, is not very carefully concealed except when the female is sitting. Then her colors and markings blend so perfectly with the surroundings that no eye can find her and she will sit on the nest until trodden upon, rather than expose her eggs to hostile eyes. She rarely leaves it until the young are hatched and gets her food, consisting of buds and grasshoppers, close by. The young birds leave the nest when hatched and live on the ground and they have only to squat to become imperceptible to the ordinary eye. When the brood has scattered the mother calls them together with a hoarse raucous croak.

About the middle of autumn they begin to alight in trees and to gather in large "packs." When startled and about to fly they utter a sharp cackling sound and this is repeated from time to time in the flight, which resembles that of the Prairie Chicken, as they alternately flap and sail. This bird seems to prefer shrubbery or the edges of the timber to the open plains, particularly in winter. EDWARD HOWE FORBUSH.

The food of the Sharp-tailed Grouse is similar to that of the Prairie Grouse. Many grasshoppers and other insects are eaten, the young being highly insectivorous like all the other Grouse, the Quails, and the Turkeys. The vegetable food comprises leaves, buds, and flowers, weed seeds, fruit, and grain. Since this is the more northern species, it naturally relies more on buds than the Prairie Grouse does, and in winter it eats birch buds, willow buds, and others. It is well worth preserving and could easily be restored and made plentiful and profitable on many of the big wheat farms of the northwestern and Pacific coast States. The Sharp-tail is very fond of wheat, but it cannot secure the grains beneath the snow during the long winters, and it perishes because the wild roses and other winter foods have been destroyed. A handsome border to a private road, fence, or path, containing wild roses and sunflowers and prairie grasses, could be made to yield a good crop of Grouse, many of which might be shot on the stubbles in the autumn without any danger of extermination. Some stock birds should be left, of course, and the Prairie Falcon, the coyote, the snake and other enemies should not be permitted to devour them.

SAGE HEN

Centrocercus urophasianus (*Bonaparte*)

A. O. U. Number 309

Other Names.— Cock of the Plains; Sage Cock; Sage Grouse.

General Description.— Length, male, 25 to 30 inches; female, 20 inches. Color above, black, brown, and yellowish-white, variegated; below, yellow-white. Tarsus, feathered to toes; tail, longer than wings, graduated, and with the 20 feathers pointed.

Color.— MALE: Above, varied with black, grayish-brown, and dull yellowish-white; the wing-coverts, streaked with whitish; tail with the marbling tending to form bars; on side of neck a patch of feathers with stiff shafts changing to hair-like filaments at ends about 3 inches long; in front of these feathers a naked patch of yellow skin capable of great distension; above them a tuft of white down feathers covered with long plumes of black; chin and throat, blackish usually with a definite white collar behind; rest of lower parts, yellow-white with a large black area on abdomen. ADULT FEMALE: Plumage similar to male, but lacking black throat and with no peculiar feathers on neck; tail, much shorter and with narrower feathers. YOUNG: Similar to adult female but brownish above.

Nest and Eggs.— NEST: Slight depression in the ground, scratched out by the bird, usually under sage bushes. EGGS: 7 to 9, dull yellowish-olive to greenish-brown, marked with round spots of dark brown.

Distribution.— Sagebrush plains from southern British Columbia, southern Saskatchewan, and northwestern North Dakota, south to middle-eastern California, northwestern New Mexico, and northwestern Nebraska.

The Sage Hen is unique. It is the largest of American gallinaceous birds, excepting only the Wild Turkey. It is one of the most remarkable fowls of the world. Nevertheless, the American people are fast exterminating it. It exceeds all other Grouse in size, with the possible exception

of the great Black Grouse or Capercallie of Europe, and its peculiar nuptial performances go far to establish it as one of the wonders of animated nature which should be carefully preserved for all time. Ordinarily it does little injury to man's crops or chattels. Why then should it be exterminated?

Thus far the systematists have not been able to find a subspecies of the Sage Hen. Everywhere it has the same habits, frequenting the high, dry alkali plains, sometimes at an altitude of more than seven thousand feet, among the sagebrush (*Artemesia*). It stands or falls with the sagebrush and in these days it commonly falls. We are told now that it is disappearing in Oregon and Washington, gone from the Black

Photo by W. L. Finley and H. T. Bohlman

PORTRAIT OF SAGE HEN

Hills, and thinning rapidly in numbers elsewhere. Like all the game birds of the open it can hide or fly from its natural enemies, but cannot withstand the combination of man, dog, and gun, with shooting at all seasons of the year. The young are preferred for the table as they have less sage flavor than their parents, and when the callow young are destroyed the species cannot last, as the adults are not immortal. The old birds are "tougher than tripe," in more ways than one. Nevertheless, they may be eaten if properly prepared. Edwin Sandys says that he is willing to admit that "an aged sage hen doth possess that sageness that one might expect with advancing years," but carved with bowie knife or hatchet it will sustain human life. Its flavor is improved by drawing the bird as soon as it is dead.

The Sage Cock has a sharp cackle, *kek, kek, kek*, which voices its alarm when flushed, but its mating notes are not what one would expect from a bird of its size. It begins its "drumming" or croaking very early in the season, sometimes even in fine winter weather. The mating grounds are in conspicuous places, such as a barren flat or moraine, and the birds may be readily watched from a distance with a powerful glass. From twenty-five to one hundred or more males congregate in these places. They are polygamous and the females come to them from all quarters at sunset or early in the morning. The males being in full dress and vigor late in February or in March in the United States, or later in higher latitudes, assemble at their chosen spots on fine mornings and, standing erect, hold their drooping wings well away from their sides, raise and spread the tail, which often works from side to side, while the loose skin of the neck is drawn in and out and the great pale sacs on the sides of the neck are distended until the white feathers surrounding them bristle out in all directions. The air sacs when inflated are not semi-globular in shape, as in the Prairie Chicken, but irregular, bulbous, and enormous, sometimes protruding an inch above the head and well out in front. The skin between the sacs is next drawn in with a sucking motion, bringing them nearly together and the air is expelled from the throat, producing peculiar guttural grunting or croaking sounds, some of which have been described by Bendire as resembling the purr of a cat, but louder. Bond says that it produces an "inconsequential chuckling noise," while Burnett describes it as resembling the sound of an old pump, thus, *punk de punk, punk* — the first note low and the last two higher in pitch. The cocks strut with tail widely spread and erect, the acuminate tail-feathers standing out separately like so many spikes, sometimes dragging the wings on the ground, and dance with the pomp of a Pouter Pigeon. Rival, jealous males frequently fight viciously, but the battling consists mostly in seizing one another by the head or neck and beating with the wings and is not sanguinary or long continued. One of their habits at this time is to lower the breast to the ground and push it along. In some localities this is done so frequently that the feathers on the lower neck become worn down to mere shafts, appearing like so many bristles. Sometimes in their enthusiasm they even roll in the dust. Bond says that the cock inflates its neck until the whole neck and breast present a balloon-like appearance and then, bending forward, throws the entire weight of its body on the distended portions, sliding along on the bare ground for some dis-

tance and concluding by expelling the air with a variety of cackling, chuckling, or rumbling sounds.

In May when the song of the Sage Thrush begins, the mating of the Sage Hens is about over. Then the females make their nests, often near some spring or stream. The mother bird on the nest is a difficult object to see. She seems to know it and sits very close. For this reason she is regarded as foolish and sometimes is known as "fool hen." The little ones are ready to run about fifteen minutes after they leave the shell, so Burnett informs us, are colored like little Turkeys, and "peep" similarly. Also they have a plaintive whistle, *ra-do-ra-do*. At night they nestle themselves under the mother's wings, only a row of little heads showing outside. As the summer wanes, the Sage Hens and their well-grown young often spend the days on flats, near streams or near water holes. By November the young are full-grown, but are lighter in color than their mother.

The Sage Grouse seldom is to be found far from the sagebrush. Where this grows high along the river bottoms the birds often lie closely and they match their environment in color, so that the hunter may walk into the midst of a brood without seeing them and they may rise on all sides. They labor into the air with noisy wings, but fly fast when well under way. Where they have been much hunted they are likely to rise beyond gunshot and start for the horizon.

Late in the season when they have become wary they assemble in "packs." In winter they are said to retire from some exposed localities to the valleys or to the shelter of the timber. Although they feed largely on the leaves of the sage, insects form a considerable part of the food of the young, and in some regions they attack grain, alfalfa, and garden plants. Their habits are such that they are exposed to the inclemency of the weather, which ordinarily seems to affect them little. Sometimes, however, they become drenched by severe rains so that they are unable to rise from the ground. Hailstorms sometimes kill the young and even the full-grown birds.

EDWARD HOWE FORBUSH.

TURKEYS

Order *Gallinæ*; suborder *Phasiani*; family *Meleagridæ*

THE Turkeys are distinctively American birds. Formerly ranked as a separate family, they are now regarded as the only native American representatives of the Pheasant family. They are confined to North America and to Central America, and the only species now recognized are the Common Turkey, of which the ornithologists describe five forms—Merriam's Turkey (*Meleagris gallopavo merriami*), the Florida Turkey (*Meleagris gallopavo osceola*), the Rio Grande Turkey (*Meleagris gallopavo intermedia*), the American Wild Turkey (*Meleagris gallopavo silvestris*) and the type species which is not found in the United States—and the Yucatan Ocellated Turkey, smaller but with even more brilliant plumage. Our Common Turkey is still found in a slightly different form in Mexico, whence it was introduced into Europe about 1530.

Elon H. Eaton remarks that "the scientific name of the family is a misnomer, being the original name of the Guinea Hen, and if the popular impression of the origin of the common name is correct, this is a misnomer also, but it is probable, as has been suggested, that the common name has reference to the call note of the bird, which resembles the syllables *turk, turk, turk*."

Turkeys have the head and neck naked except for a few stiff bristles, and wrinkled and wattled, with an erectile process growing on the forehead. The tarsus is naked, covered with scales, and, in the male, spurred. The tail is broad and rounded with fourteen to eighteen blunt feathers. The male has a "beard" of coarse black bristles hanging from the center of upper breast.

WILD TURKEY

Meleagris gallopavo silvestris *Vieillot*

A. O. U. Number 310a

Other Names.— American Turkey; Eastern Turkey; Northern Turkey; Wood Turkey; American Wild Turkey.

General Description.— Length, male, 4 feet; female, 3 feet. Prevailing color, iridescent copper-bronze. Head and neck, naked.

Color.—Adult Male: The naked skin of the head and neck, different shades of red, the excrescences more purplish or blue; the feathers are broad with square ends, each one well defined, giving the bird the appearance of being covered with scales, their ground color coppery-bronze, abruptly margined with velvet-black, the bronze assuming a greenish or purplish shade where the two colors meet; lower back and rump, black with little or no gloss; upper and under tail-coverts, dark purplish-chestnut with a subterminal bar of black; tail, dark-brownish with numerous traverse bars of black and a broad subterminal bar of the same color from two inches wide on the outer feathers to about one inch on the central ones, spaces between the black bars speckled with dusky; bill, yellowish-white tinged with red; legs, red, the scales outlined with yellowish-white; claws, black; iris, deep brown. Adult Female: Head and neck, smooth, pinkish or pale reddish; rest of the plumage very much duller than in the male and with little or no metallic gloss.

Nest and Eggs.— Nest: Placed on the ground, in tall dense weeds or tangled thickets; very well concealed. Eggs: 9 to 18, usually 9 to 12, warm yellowish-white evenly dotted over the entire surface with reddish-brown.

Distribution.—Eastern United States from Nebraska, Kansas, western Oklahoma, and eastern Texas east to central Pennsylvania, and south to the Gulf coast; formerly north to South Dakota, southern Ontario, and southern Maine.

When, early in the sixteenth century, the Spanish conquerors invaded Mexico, they found the natives in possession of some large domesticated birds which were extremely toothsome. Some were transferred to Spain and it was found they would breed readily in captivity. In time these birds were introduced into France and England, and by and by emigrants brought them back to America. The Turkey in its native condition is distinctively a North American species. The wild birds in this country today chiefly inhabit deep woods and the borders of swamplands. In the southwest one may look for them among the chaparral in the neighborhood of streams, or in the oak and piñon groves.

At one time they were very abundant in many places, and early writers tell of their custom of gathering in flocks of hundreds and migrating on foot for long distances in quest of forest mast upon which they fed extensively. This habit of collecting in large flocks may still be noted in some regions, as for example on some of the islands off the coast of Georgia.

Wild Turkeys are polygamists, a strong gobbler having two or three hens under his observation. When the laying time approaches, the hens steal away and make their nests in the grass or bushes in some open place in the woods, or abandoned bush-grown fields. They hide their nests with great care, not only to avoid foxes and other predatory animals, but to prevent detection by the gobbler. It is unanimously believed that he will break the eggs if he comes upon a nest. After the nesting season, groups of from ten to forty birds may be found feeding together in the bottom lands or coming into the crop field at dawn.

They are usually hunted with dogs. A well-trained Turkey dog upon finding a group of birds rushes barking among them, thus causing the Turkeys to fly in all directions. The hunter goes to the spot, erects a small blind of logs or brush, calls in his dog, and sits down to wait for a time. In about an hour he begins to sound his call, imitating the get-together notes of the Turkey. If fortune smiles upon him he will in the end get two or three birds, for the Turkeys have the habit of reassembling at the place from which they scattered when disturbed.

T. Gilbert Pearson.

Photograph of habitat group

Courtesy of American Museum of Natural History

WILD TURKEYS IN THE WEST VIRGINIA MOUNTAINS

Close relatives of our domesticated Turkey

PROPERTY OF
COLBY SCHOOL FOR GIRLS

PHEASANTS

Order *Gallinæ;* suborder *Phasiani;* family *Phasianidæ*

WITHIN recent years a new industry, the rearing of Pheasants, has begun to engage attention in the United States, and propagating ventures, ranging from the single pen with one or two pairs of birds to the pheasantry of many acres and thousands of birds, are scattered throughout the country. Some of these experiments have been conducted by the States through their game officials; others, by associations and individuals. In a few cases large expense has been incurred and great care and attention have been bestowed on the experiments. Efforts have been made also to stock numerous public and private parks, preserves, and aviaries. To supply the demand, not only have pheasants been imported from the Old World, but many persons in this country have undertaken to rear them. In view of the widespread and rapidly increasing interest in the subject, the Department of Agriculture has made a special investigation of the methods of Pheasant raising. The results are here condensed in the form of practical suggestions for the benefit of those interested in the industry.

The true Pheasants are a strictly Old World genus and the species which have been introduced into this country are totally different and distinct from the Ruffed Grouse (called "Partridges" in most of the northern States), which is popularly but quite inaccurately called "Pheasant" in the southern, and also in some of the northern States, notably Ohio and Pennsylvania. This blunder originated in the early settler's habit of applying to American birds the names of more or less similar European species, though in this instance it must have required a considerable tax on the imagination to detect any resemblance between the strikingly colored and very long-tailed European Pheasants and the neutral hued, always short-tailed Grouse of the New World.

A few words as to different kinds of Pheasants are essential to a proper understanding of the subject of Pheasant propagation. The Ring-necked Pheasant usually imported from China, its natural home, has a broad white ring about the neck. It is variously called Ringneck Pheasant, Chinese Pheasant, China Pheasant, China Torquatus Pheasant, Chinese Ringneck, Mongolian Pheasant, Denny Pheasant, and Oregon Pheasant.

The English Pheasant has no ring about the neck. It is imported from Europe, but in comparatively small numbers, and is known as the English Pheasant, Dark-necked Pheasant, and Hungarian Pheasant.

The English Ringneck Pheasant, a hybrid between the English and Ring-necked Pheasants, has been brought from Europe in large numbers. It is generally correctly named, but is sometimes designated as English Pheasant, Ringneck Pheasant, and even Mongolian Pheasant. It often has more or less of the blood of the Versicolor Pheasant, of Japan. In England both the English Pheasant and the English Ringneck are referred to as the Common Pheasant.

The Mongolian Pheasant which has a more or less complete white ring about the neck, but in other respects resembles the English Pheasant more than it does the Ringneck, is the rarest of the four kinds in American preserves and aviaries. It is a native of the region about Lake Balkash, Central Asia.

The Bohemian Pheasant and the White Pheasant are merely color phases, chiefly of the English Pheasant and the English Ringneck. The Reeves Pheasant, a large and striking bird with a tail sometimes five or six feet long, is usually met with in aviaries, though it has been placed in game coverts in Europe and, to a very limited extent, in the United States, and may still be found on certain Scotch estates, where it ranks very high as a game bird. It normally inhabits east-central Asia.

Two of the best known and most commonly imported Pheasants are the Golden and Lady Amherst, both of the genus *Chrysolophus*, originally from the mountains of eastern Tibet and western and southern China. Both are favorite aviary birds, and the Golden Pheasant has been liberated in various game covers in America and Europe, but with indiffer-

ent success. The Silver Pheasant is often seen in parks and aviaries, but the numerous other members of the genus, usually called Kaleeges (or Kalijes), are not often imported into this country. The home of the genus is the Indo-Chinese countries and the lower ranges of the Himalayas.

The Eared Pheasants, large, dull-colored birds of the higher ranges of central and eastern Asia, are known in American aviaries mainly through the Manchurian Pheasant, the most northerly member of the genus. These Pheasants lack the timidity so characteristic of most of the Pheasant family and would probably lend themselves readily to domestication. At present their high price is practically prohibitive of any extensive attempt to domesticate them, but, should they become more common, they would be excellent subjects for such experiments.

The English Pheasant (*Phasianus colchicus*) derives its specific name from the ancient country of Colchis, on the eastern shore of the Black Sea. It was imported thence into Europe by the Greeks, probably under Alexander the Great, and was by them reared for food. Its propagation in confinement was continued in the days of the Roman Empire, under which it appears to have been carried on throughout much of Europe and as far west as Britain. It was introduced into Ireland and Scotland before the close of the sixteenth century. It is now acclimatized practically all over Europe, and has been introduced into the United States, Canada, Australia, and New Zealand.

Photo by H. T. Middleton

WILD RING-NECKED PHEASANT (HEN)

Efforts to acclimatize Pheasants in the United States are of comparatively recent origin, though earlier than is popularly supposed. Richard Bache, an Englishman who married the only daughter of Benjamin Franklin, imported from England both Pheasants and Partridges, which he liberated on his estate in New Jersey, on the Delaware River near where the town of Beverly now stands. But, although he provided both shelter and food for them, the birds had all disappeared by the following spring.

A second attempt was made early in the nineteenth century by the owner of a New Jersey estate situated between the Hackensack meadows and the Passaic River, opposite Belleville. A park was fenced and stocked with deer and English Pheasants, but despite feeding and careful protection these birds likewise disappeared during the winter.

Robert Oliver of Harewood, near Baltimore, Md., for many years imported foreign game, including not less than one hundred English Pheasants. These increased rapidly and were in time turned out, some at Hampton, some at Brookland Wood, and a large number at Harewood. Those liberated at Hampton and Brookland Wood bred, and were occasionally seen afterwards, but those turned out at Harewood soon disappeared, the last being seen in 1827. In 1829–30, Mr. Oliver liberated at his estate at Oaklands, in Anne Arundel County, more than twenty Pheasants of his own raising. On Mr. Oliver's death his son Thomas continued the experiments, but they proved unsuccessful.

These initial importations were followed by similar attempts to stock private preserves, but met with like failure. In 1880, however, a successful effort was made to introduce the

Ringneck Pheasant into Oregon, and since then acclimatization experiments have followed broader lines and have assumed greater importance.

The failure of many efforts to add Pheasants to our fauna is largely due to insufficient knowledge of their habits and the character of their normal environment. It is useless to undertake to acclimatize a bird in a region differing widely in climatic and other physical conditions from those to which it has been accustomed.

It must be remembered, also, that introduced birds have to adapt themselves to a new flora and fauna, and that this is often a slow process and frequently fails. If liberated in the wilds, they must be provided with reserve food and shelter until able to care for themselves, which may take several years. In Oregon the Ringnecks put out came at first regularly to farm-yards to feed with the domestic fowls; and English Ringnecks liberated on Grand Island, Michigan, were driven back by severe weather to the pens from which they had been allowed to escape a few months before.

If Pheasants are imported for stocking preserves, suitable coverts should be prepared for them. In their native country Pheasants frequent the margins of woods, coming into open tracts in search of food, retreating into thick undergrowth when alarmed. An ideal Pheasant country is one containing small groves with underbrush and high grass between the trees, thorny hedges, berry-growing shrubs, water overgrown with reeds, and occasional pastures, meadows, and cultivated grain-fields. Bleak mountains, dry sandy wastes, and thick woods are not frequented by Pheasants normally; nor do they seek pines, except for protection. A small grove of mixed evergreen and deciduous trees on the southern slope of a hill furnishes favorable shelter. On the preserve additional shelter should be provided in winter.

Photo by W. T. Davis Courtesy of Nat. Asso. Aud. Soc.

PHEASANT'S NEST

Gardiners Island, New York

HENRY OLDYS, in *Pheasant Raising in the United States.*

ENGLISH PHEASANT

Phasianus colchicus *Linnæus*

Length.— Male, 36 inches or less according to development of the tail, tail up to 21 inches; female, about 24 inches, tail 12 inches. Slightly larger than the Ring-necked Pheasant.

Spread of Wings.— 32 inches.

Weight.— Male, about 3 pounds; female, about 2 pounds.

Description.— MALE: Tail very long, coneate, tapering; head with ear tufts and finely mottled sides; head and neck peacock-blue, glossed with metallic reflections of green, bronze, and purple; sides of head, bare, scarlet; back, orange-brown, variegated with dark green, buff, and black; rump and upper tail-coverts, rufous, with black and reddish variegations; tail, olive-brown, edged with purplish-rufous, and barred with black; breast, glossy, coppery chestnut, edged with purplish; no rings about the neck. FEMALE: Plain blended light brown and dusky.

RING-NECKED PHEASANT

Phasianus torquatus *Gmelin*

Length.— 34 inches when the tail is full-grown.

Spread of Wings.— 32 inches.

Weight.— 2¾ pounds or more.

Description.— Similar in general color to the English Pheasant, but male with a conspicuous white ring about the neck; top of head, more greenish-bronze and a whitish line on sides of crown; the sides, golden buff spotted with black; the upper wing-coverts, pale grayish-blue; the sides of the rump, grayish-blue; abdomen, greenish-black.

ORDER OF PIGEONS AND DOVES

Order *Columbæ;* family *Columbidæ*

THE names Pigeon and Dove, applied to birds of this group, are synonymous or interchangeable. The former is French (Italian, *piccione* or *pipione*, Latin *pipio*); the latter is akin to the Dutch *duif* (Danish *due*, Icelandic *dufa*). The name *Dove* is commonly applied to the smaller members of the group, though in England the largest species is called the Ring Dove; and, as Professor Alfred Newton remarked in his *Dictionary* of *Birds*, "no sharp distinction can be drawn between Pigeons and Doves, and in general literature the two words are used almost indifferently while no one species can be pointed out to which the word Dove, taken alone, seems to be absolutely proper."

Pigeons are monogamous, but nevertheless are to a degree fickle or inconstant in their affections, at least in the domesticated species, and are by no means the peaceful birds they are popularly supposed to be — fierce, bloody, and stubborn conflicts often occurring during the breeding season. The eggs number one or two and are usually immaculate white but sometimes are immaculate buff. The nest is a very simple affair, usually flat and frail, composed of twigs, straw, or similar materials, placed in a tree, upon stumps, rocks, or walls, clefts of cliffs, in buildings, or on the ground. Both sexes take equal part in nest building, incubation, and care of the young. The latter are hatched naked, except for scattered bits of filamentous down, and are fed first by a fluid secreted in the crop of the adult and later with moistened or partially digested seeds or grain from the parents' crop, the young one in both cases inserting its bill into the parent's mouth, the regurgitation of the food by the parent being accompanied by a violent or spasmodic jerking of the body and wings.

The food of Pigeons consists principally of grains, seeds, and fruits, and salt is seemingly a necessity to them. In drinking, the bill is immersed to the nostrils, and the water drawn in in a continuous draft, a method in which they are, so far as known, unique among birds. The voice of Pigeons is, usually, a soft *coo*, varied in strength and modulation according to species. It is sometimes extremely loud in proportion to the size of the bird, one of the smaller American species, the blue Ground Dove, producing a sound resembling that made by blowing one's breath into the mouth of a bottle, but nearly as loud as the bellowing of a bull. In others the voice is plaintive or even mournful.

The Pigeons have the head small; neck short; bill horny at the tip, compressed, and with a tumid swelling near the base about the nostril; wings pointed, flat, powerful, with rapid whistling flight; legs short, the tarsus scaled on the sides and back and sometimes in the front as well; front toes cleft to the base or with a slight membrane between the middle and outer toes; hind toe level with the front toes, thus making them arboreal as well as terrestrial in their habits because they can perch easily; body plump and full-breasted; and eye region usually more or less naked. The plumage is peculiarly dense, but is easily detached from the very tender skin.

Pigeons are found throughout the temperate and tropical portions of the world, but are most numerous in the eastern hemisphere, especially in the islands of the Indo-Malayan and Australian regions, where the most beautifully colored species occur, many of them being among the handsomest of birds. More than five hundred and fifty species and subspecies are known, of which only about one hundred species and subspecies occur in America, and only seventeen of these are of regular or even rare occurrence north of the southern boundary of the United States.

BAND-TAILED PIGEON

Columba fasciata fasciata *Say*

A. O. U. Number 312

Other Names.—White-collared Pigeon; Wild Pigeon.

General Description.— Length, 16 inches. Head and under parts, purplish-drab; upper parts, brownish-gray and bluish-gray.

Color.— ADULTS: Head, purplish-drab becoming paler and usually more grayish on cheeks and throat, which are sometimes distinctly more grayish in contrast with color of crown; *across nape or upper hindneck, a bar of white;* below this, the whole hindneck, metallic greenish-bronze, the feathers with sharp outlines, producing a somewhat scaled effect; back, shoulders, and front lesser wing-coverts, grayish-brown, very faintly glossed, in certain lights, with bronzy; rump and upper tail-coverts, neutral gray; *tail, brownish-gray with a band of darker gray* to dull black across the middle portion separating the darker and lighter gray areas; rear lesser wing-coverts, middle coverts, and greater coverts, brownish-gray, the greater coverts, narrowly edged with white; inner secondaries, similar but more brownish, without distinct whitish edgings, the outer ones much darker, distinctly though narrowly edged with whitish; primaries and coverts, dusky, the first narrowly edged with white; under parts, purple-drab usually somewhat clearer or more reddish on under parts of body and more grayish on throat, the abdomen (at least the lower portion), anal region, and under tail-coverts, white; under wing-coverts, pale neutral gray; bill, yellow, the tip black; iris, pale yellow next to pupil with outer ring of pink or lilac; eyelids, red; legs and feet, clear cadmium-yellow. YOUNG: Very different in coloration from adults, only the tail, wings, and primary coverts being similar; no white bar on nape nor metallic feathers on hindneck; crown, hindneck, sides of neck, and sides of head, brownish-gray, much paler on chin and upper throat; smaller wing-coverts, margined with paler, as are also feathers of chest; shoulders sometimes suffused with brown.

Nest and Eggs.— NEST: A slight, frail platform of small, narrow twigs in trees or bushes or in forests, near water; sometimes on ground with slight nesting material. EGGS: 1 or 2, porcelain-white.

Distribution.— Western United States north to southwestern British Columbia and Montana, from Pacific coast to Rocky Mountains; east to Montana, western North Dakota, Colorado, New Mexico, and western Texas; southward over nearly the whole of Mexico and through the highlands of Guatemala to northern Nicaragua.

Drawing by R. Bruce Horsfall

BAND-TAILED PIGEON (½ nat. size)

A fine bird, in danger of becoming extinct

The most striking example of the disappearance of a species in American natural history is that of the Passenger Pigeon. The Band-tailed Pigeon of the West might have followed in the path of the eastern bird within a few years, had our people not been aroused to its necessity for protection. The enactment in 1913 of the Federal law for the protection of migratory birds was the most important step ever taken in saving this as well as other species of American birds. Under the provisions of this act, the Band-tailed Pigeon has been removed entirely from the list of game birds that can be killed until September 1, 1918.

The Band-tailed Pigeon, often called Wild Pigeon, is sometimes mistaken for the Passenger Pigeon. It ranges up and down the Pacific coast with an occasional record as far east as Colorado and western Texas. The habit of the Pigeon collecting in large bands in certain seasons has made it possible in the past for hunters to kill enormous numbers. This, coupled with the fact that the bird does not reproduce itself rapidly, usually laying but a single egg, is sufficient reason why it can be exterminated readily.

Twenty-five or thirty years ago, men made a business of netting Band-tailed Pigeons in the Willamette valley, Oregon, for the market. Mr. O. G. Dalaba of Corvallis, Oregon, says that he caught a great many in the coast hills in the early nineties. He says he got twenty-five dozen birds at one spring of the net at Eddyville and many others got away. At that time, they were shipped to Portland and San Francisco by way of steamers from Yaquina Bay. He shipped as many as eighty dozen at a time. The birds were accustomed to collect around mineral springs or at watering places at certain seasons of the year.

During the winter of 1911 and 1912, Mr. W. Lee Chambers reported an immense flight of Band-tailed Pigeons from Paso Robles south to Nordhoff all through the coast mountains. Great numbers of the birds were killed and shipped to San Francisco and Los Angeles. One hunter shipped over two thousand birds. A great many hunters from all through southern California turned out daily to shoot Pigeons. This was a good example of a certain time and place where perhaps a large portion of the existing numbers of Pigeons collect together and stay about in one locality until they are practically destroyed. It would take very few occurrences like this to exterminate the species.

WILLIAM L. FINLEY.

PASSENGER PIGEON

Ectopistes migratorius (*Linnæus*)

A. O. U. Number 315 See Color Plate 42

Other Names.—Wild Pigeon; Pigeon; Wood Pigeon; Red-breasted Pigeon; Blue-headed Pigeon.

General Description.— Length, 17 inches. Prevailing color above, grayish-blue; below, reddish-fawn. Tail, very long, graduated for more than half its length, the feathers (12 in number) narrowed terminally and obtusely pointed; wings, long and pointed.

Color.— ADULT MALE: Head, including nape, plain bluish-gray, paler on chin and upper throat; hindneck similar, but glossed with golden or coppery-bronze; the sides of neck, brilliant golden-bronze changing to metallic purple-bronze; back, slate-gray tinged with grayish-brown or olive-brown; shoulders and inner secondaries, grayish-brown, some of the former with a large oblong black spot (mostly concealed) on outer web, the rear shoulder-feathers also with inner web edged with black; inner wing-coverts, similar in color to shoulders but usually slightly (often distinctly) more grayish, passing on outer coverts into slate-gray; outer secondaries, dull brownish-black or dusky, usually narrowly edged terminally with paler; primary coverts and primaries, dark grayish-brown, the latter (except outermost) narrowly margined with dull whitish, the edgings on outer web growing much broader basally, and often orange-cinnamon, at least in part; lower back and upper rump, clear bluish-gray, passing into more brownish-gray on upper tail-coverts; middle pair of tail-feathers, darker brownish-gray passing into dusky terminally; next pair with outer web light gray, inner web white, the next three pairs similar but with white of inner web passing into pale gray basally, the outermost with outer web white — all (except middle pair) with a sub-basal roundish black spot on inner web, preceded by a spot of cinnamon-rufous; lower throat, foreneck, chest, breast, and sides, plain reddish-fawn color, passing into white on abdomen, anal region, and under tail-coverts; bill, black; iris, scarlet or scarlet-vermilion; bare eye space, livid flesh color; legs and feet, lake-red or pinkish-red. ADULT FEMALE: Distinctly duller in plumage than the adult male: the head, more brownish-gray; the back, shoulders, and secondaries, more decidedly brownish; the shoulders and wing-coverts, more heavily spotted with black; the reddish-fawn color of the foreneck and rest of under parts, replaced by light drab, passing into pale drab-gray on breast and sides and metallic gloss of hindneck and sides of neck less brilliant; iris, orange or orange-red; bare eye space, pale grayish-blue; legs and feet, paler lake-red than in adult male.

Nest and Eggs.— NEST: Before its extermination, nested in myriads; in the extensive forests sometimes fifty or more of their frail structures of twigs seen in a single tree. EGGS: 1 or 2, pure white.

Distribution.— Now extinct, the last living specimen having died in the Cincinnati Zoological Garden, September 1, 1914. Formerly perhaps the most numerous of all birds, inhabiting practically the whole forested area of eastern North America, breeding northward to middle western Keewatin, northern Ontario, Quebec, northern Maine, New Brunswick, and Nova Scotia, southward to Kansas, northern Mississippi, Kentucky, and Pennsylvania; migrating southward to the Gulf coast (Florida to Texas), casually to Cuba, eastern Mexico, and Guatemala; westward regularly, along the Missouri River to eastern Montana and to western Texas, accidentally to Nevada, Wyoming, eastern Oregon, western Washington, and British Columbia; accidental in British Isles, Europe, and the Bermudas.

More interest is evidenced in the history of the Passenger Pigeon and its fate than in that of any other North American bird. Its story reads like a romance. Once the most abundant species, in its flights and on its nesting grounds, ever known in any country, ranging over the greater part of the continent of North America in innumerable hordes, the race seems to have disappeared during the nineteenth century, leaving no trace.

The Passenger Pigeon was described by Linné in the latter part of the eighteenth century; but it was well known in America many years before. In July, 1605, on the coast of Maine, in latitude 43° 25′, Champlain saw on some islands an "infinite number of Pigeons," of which he took a great quantity. Many early historians, who write of the birds of the Atlantic coast region, mention the Pigeons. The Jesuit Fathers, in their first narratives of Acadia (1610–13), state that the birds were fully as abundant as the fish, and that in their seasons the Pigeons overloaded the trees. Passing from Nova Scotia to Florida, we find that Stork (1766) asserts that they were in such plenty there for three months of the year that an account of them would seem incredible. John Lawson (1709), in his *History of Carolina,* speaks of prodigious flocks of Pigeons in 1701–02, which broke down trees in the woods where they roosted, and cleared away all the food in the country before them, scarcely leaving one acorn on the ground. The early settlers in Virginia found the Pigeons in winter "beyond number or imagination." The Plymouth colony was threatened with famine in 1643, when great flocks of Pigeons swept down upon the ripened corn and beat down and ate "a very great quantity of all sorts of English grain." But Winthrop says that in 1648 they came again after the harvest was gathered, and proved a great blessing, "it being incredible what multitudes of them were killed daily."

These great flights of Pigeons in migration extended over vast tracts of country, and usually passed in their greatest numbers for about three days. This is the testimony of observers in many parts of the land. Afterwards, flocks often came along for a week or two longer. Even as late as the decade succeeding 1860 such flights continued, and were still observed throughout the eastern States and Canada, except perhaps along the Atlantic coast.

About 1850 indications of the disappearance of the Pigeons in the East began to attract some notice. They became rare in Newfoundland in the 60's, though formerly abundant there. They grew fewer in Ontario at that time; but, according to Fleming, some of the old roosts there were occupied until 1870.

Alexander Wilson, the father of American ornithology, tells of a breeding place of the Wild Pigeons in Shelbyville, Ky. (probably about 1806), which was several miles in breadth, and was said to be more than forty miles in extent. More than one hundred nests were found on a tree. The ground was strewn with broken limbs of trees; also eggs and dead squabs which had been precipitated from above, on which herds of hogs were fattening. He speaks of a flight of these birds from another nesting place some sixty miles away from the first, toward Green River, where they were said to be equally numerous. They were traveling with great steadiness and rapidity, at a height beyond gunshot, several strata deep, very close together, and "from right to left as far as the eye could reach, the breadth of this vast procession extended; seeming everywhere equally crowded." From half-past one to four o'clock in the afternoon, while he was traveling to Frankfort, the same living torrent rolled overhead, seemingly as extensive as ever. He estimated the flock that passed him to be two hundred and forty miles long and a mile wide — probably much wider — and to contain two billion, two hundred and thirty million, two hundred and seventy-two thousand pigeons. On the supposition that each bird consumed only half a pint of nuts and acorns daily, he reckoned that this column of birds would eat seventeen million, four hundred and twenty-four thousand bushels each day.

Audubon states that in the autumn of 1813 he left his house at Henderson, on the banks of the Ohio, a few miles from Hardensburgh, to go to Louisville, Ky. He saw that day what he thought to be the largest flight of Wild Pigeons he had ever seen. The air was literally filled with them; and the "light of noonday was obscured as by an eclipse." Before sunset he reached Louisville, fifty-five miles from Hardensburgh, and during all that time Pigeons were passing in undiminished numbers. This continued for three days in succession. The people were all armed, and the banks of the river were crowded with men and boys, incessantly shooting at the Pigeons, which flew lower as they passed the river. For a week or more the people fed on no other flesh than Pigeons. The atmosphere during that time was strongly impregnated with the odor of the birds. Audubon estimated the number of Pigeons passing overhead (in a flock one mile wide) for three hours, traveling at the rate of a mile a

PASSENGER PIGEON *Ectopistes migratorius* (Linnaeus)

YOUNG MALE FEMALE

$\frac{1}{3}$ nat. size

MOURNING DOVE *Zenaidura macroura carolinensis* (Linnaeus)

FEMALE YOUNG MALE

$\frac{1}{5}$ nat. size

minute, allowing two Pigeons to the square yard, as one billion, one hundred and fifteen million, one hundred and thirty-six thousand. He estimated, also, that a flock of this size would require eight million, seven hundred and twelve thousand bushels of food a day, and this was only a small part of the three days' flight.

Great flights of Pigeons ranged from the Alleghenies to the Mississippi and from Hudson Bay to the Gulf of Mexico until after the middle of the nineteenth century. Even two decades later, enormous numbers of Pigeons nested in several States.

Their winter roosting places almost defy description. Audubon rode through one on the banks of the Green River in Kentucky for more than forty miles, crossing it in different directions, and found its average width to be rather more than three miles. He observed that the ejecta covered the whole extent of the roosting place, like snow; that many trees two feet in diameter were broken off not far from the ground, and that the branches of many of the largest and tallest had given way. The birds came in soon after sundown with a noise that sounded "like a gale passing through the rigging of a close-reefed vessel," causing a great current of air as they passed; and here and there as the flocks alighted, the limbs gave way with a crash, destroying hundreds of birds beneath. It was a scene of uproar and confusion. No one dared venture into the woods during the night, because of the falling branches.

The nesting places sometimes were equal in size to the roosting places, for the Pigeons congregated in enormous numbers to breed in the northern and eastern States. When food was plentiful in the forests, the birds concentrated in large numbers; when it was not, they scattered in smaller groups. The last great nesting place of which we have adequate record was in Michigan, in 1878. Prof. H. B. Roney states, in the *American Field,* that the nesting near Petoskey, that year, covered something like 100,000 acres, and included not less than 150,000 acres within its limits. It was estimated to be about forty miles in length and from three to ten miles in width. It is difficult to approximate the number of millions of Pigeons that occupied that great nesting place.

Audubon, who described the dreadful havoc made among these birds on their roosting grounds by man, says that people unacquainted with them might naturally conclude that such destruction would soon put an end to the species; but he had satisfied himself, by long observation, that nothing but the gradual diminution of the forests could accomplish the decrease of the birds, for he believed that they not infrequently quadrupled their numbers during the year, and always doubled them. The enormous multitudes of the Pigeons made such an impression upon the mind that the extinction of the species at that time, and for many years afterwards, seemed an absolute impossibility. Nevertheless, it has occurred. How can this apparent impossibility be explained? It cannot be accounted for by the destructiveness of their natural enemies, for during the years when the Pigeons were the most abundant their natural enemies were most numerous. The extinction of the Pigeons has been coincident with the disappearance of bears, panthers, wolves, lynxes, and some of the larger birds of prey from a large portion of their range.

The aborigines never could have reduced appreciably the numbers of the species. Wherever the great roosts were established, Indians always gathered in large numbers. This, according to their traditions, had been the custom among them from time immemorial. They always had slaughtered these birds, young and old, in great quantities; but there was no market among the Indians, and the only way in which they could preserve the meat for future use was by drying or smoking the breasts. They cured large numbers in this way. Also, they were accustomed to kill great quantities of the squabs in order to try out the fat, which was used as butter is used by the whites. Lawson writes (1709): "You may find several Indian towns of not above seventeen houses that have more than 100 gallons of pigeon's oil or fat."

But it was not until a market demand for the birds was created by the whites that the Indians ever seriously affected the increase of the Pigeons. Kalm states, in his monograph of the Pigeon, that the Indians of Canada would not molest the Pigeons in their breeding places until the young were able to fly. They did everything in their power to prevent the whites from disturbing them, even using threats, where pleading did not avail.

When the white man appeared on this continent, conditions rapidly changed. Practically all the early settlers were accustomed to the use of firearms; and wherever Pigeons appeared in great numbers, the inhabitants armed themselves with guns, clubs, stones, poles, and whatever could be used to destroy the birds. The most destructive implement was the net, to which the birds were attracted by bait, and under which vast numbers of them were trapped. Gunners

baited the birds with grain. Dozens of birds sometimes were killed thus at a single shot. In one case seventy-one birds were killed by two shots. A single shot from the old flint-lock, single-barreled gun, fired into a tree, sometimes would procure a back load of Pigeons.

The Pigeons were reduced greatly in numbers on the whole Atlantic seaboard during the first two centuries after the settlement of the country, but in the West their numbers remained apparently the same until the nineteenth century. There was no appreciable decrease there during the first half of that century; but during the latter half, railroads were pushed across the plains to the Pacific, settlers increased rapidly to the Mississippi and beyond, and the diminution of the Pigeons in the West began. Already it had become noticeable in western Pennsylvania, western New York, along the Appalachian mountain chain and in Ohio. This was due in part to the destruction of the forests, particularly the beech woods, which once covered vast tracts, and which furnished the birds with a chief supply of food. Later, the primeval pine and hemlock forests of the northern States largely were cut away. This deprived the birds of another source of food — the seed of these trees. The destruction of the forests, however, was not complete; for, although great tracts of land were cleared, there remained and still remain vast regions more or less covered by coppice growth sufficient to furnish great armies of Pigeons with food, and the cultivation of the land and the raising of grain provided new sources of food supply. Therefore, while the reduction of the forest area in the East was a large factor in the diminution of the Pigeons, we cannot attribute their extermination to the destruction of the forest. Forest fires undoubtedly had something to do with reducing the numbers of these birds, for many were destroyed by these fires, and in some cases large areas of forest were ruined absolutely by fire, thus for many years depriving the birds of a portion of their food supply. Nevertheless, the fires were local and restricted, and had comparatively little effect on the vast numbers of the species.

The net, though used by fowlers almost everywhere in the East from the earliest settlement of the country, was not a great factor in the extermination of the Pigeons in the Mississippi valley States until the latter half of the nineteenth century. With the extension of railroads and telegraph lines through the States, the occupation of the netter became more stable than before, for he could follow the birds wherever they went. The number of men who made netting an occupation after the year 1860 is variously estimated at from 400 to 1000. Whenever a flight of Pigeons left one nesting place and made toward another, the netters learned their whereabouts by telegraph, packed up their belongings, and moved to the new location, sometimes following the birds a thousand miles at one move. Some of them not only made a living, but earned a competency, by netting Pigeons during part of the year and shooting wild-fowl and game birds during the remainder of the season. In addition to these there were the local netters, who plied the trade only when the Pigeons came their way.

Possibly the last great slaughter of Pigeons in New York, of which we have record, was some time in the 70's. A flock had nested in Missouri in April, where most of the squabs were killed by the pigeoners. This flock then went to Michigan, where they were followed by the same pigeoners, who again destroyed the squabs. The Pigeons then flew to New York State, and nested near the upper Beaverkill in the Catskills, in the lower part of Ulster County. It is said that tons of the birds were sent to the New York market from this nesting place, and that not less than fifteen tons of ice were used in packing the squabs.

During the 70's most of the Pigeons concentrated in the West. They often passed the winter in Texas, Arkansas, Missouri, the Indian Territory and contiguous regions, and the summer in Michigan and adjacent States and in the Canadian northwest. At this time some very large nets were used, grain beds were made, and the birds were allowed to come and feed there until from 200 to 250 dozen were taken sometimes at one haul.

Still, people read of the "mysterious" disappearance of the Passenger Pigeon, wonder what caused it, and say that it never has been satisfactorily explained. The New York market alone would take 100 barrels a day for weeks, without a break in price. Chicago, St. Louis, Boston and all the great and little cities of the North and East joined in the demand. Need we wonder why the Pigeons have vanished?

The birds that survived the slaughter at Petoskey in 1878 finally left the nesting place in large bodies and disappeared to the North, and from that time onward the diminution of the Pigeons was continuous. Some of the netters asserted that this great flight was swallowed up in Lake Michigan, and that the Pigeons then became practically extinct. This statement had no foun-

dation in fact. It is probable that when they left Petoskey in 1878 they retired into inaccessible regions of Canada, beyond reach of the rail and telegraph, to breed again. In April, 1880, they again passed through Michigan.

There were many smaller nestings for years after the Petoskey nesting of 1878, but the records are meager, for apparently no naturalist visited them. The Petoskey nesting of 1878 was unusually large for that time, for the reason that the birds at three large breeding places in other States or regions were driven out by persecution, and joined the Petoskey group. After this the birds exhibited a tendency to scatter to regions where they were least molested. There seem to have been two great nestings in Michigan in 1881.

Our Canadian records of the species at this time are meager. Mr. Ernest Thompson Seton says that it bred in Manitoba in considerable numbers as late as 1887; but he also says that the last year in which the Pigeons came to Manitoba "in force" was in 1878; next year they were comparatively scarce, and each year since they have become more so.

A flock was seen in Illinois in 1895, from which two specimens were taken. At that time the netting of the birds had been practically given up, and most of the dealers had seen no Pigeons for two seasons. It finally ceased, on account of the virtual extinction of the birds.

A large correspondence and a careful search through some of the literature of the latter part of the century leads to the belief that the Pigeons were common and in some cases abundant in portions of the West from 1880 to 1890, though gradually decreasing. After 1893 the reports became more vague and less trustworthy, except in a few cases. Small flocks were seen and specimens taken in the last decade of the nineteenth century in Canada, and in Wisconsin, Nebraska, Illinois, Indiana and other western States and even in some of the Eastern States. Chief Pokagon reported a nesting of Pigeons near the headwaters of the Ausable River in Michigan in 1896. In 1898 a flock of about 200 birds was said to have been seen in Michigan; one was taken; and in 1900 about fifty birds were reported.

While the big nestings of 1878 and 1881 in Michigan were the last immense breeding places of Passenger Pigeons on record, the species did not become extinct in a day or a year; they were not wiped from the face of the earth by any great catastrophe; they gradually became fewer and fewer for twenty to twenty-five years after the date set by the pigeoners as that of the last great migration.

Efforts have been made to account for the supposed sudden disappearance of the Pigeons by tales of cyclonic sea disturbances or lake storms, which are supposed to have drowned practically all of them. Undoubtedly thousands of Pigeons were destroyed occasionally, during their flights, by storms or fogs at sea or on the Great Lakes. There are many rather unsatisfactory and hazy reports of such occurrences. The earliest of these is recorded by Kalm, who says, in his account of the Passenger Pigeon, that in March, 1740, about a week after the disappearance of a great multitude of Pigeons in Pennsylvania and New Jersey, a sea captain named Amies, who arrived at Philadelphia, stated that he had seen the sea covered with dead Pigeons, in some cases for three French miles. Other ship captains, arriving later, corroborated this tale. It was said that from that date no such great multitudes of Pigeons were seen in Pennsylvania. Kalm published this in 1759, but after that date the Pigeons again came to Pennsylvania in great numbers; which shows that the drowning of this multitude had no permanent effect on the numbers of the birds. This story in some form has cropped up at intervals ever since.

Schoolcraft (1821), while walking along some parts of the shore of Lake Michigan, saw a great number of the skeletons and half-consumed bodies of Pigeons, which he says are overtaken often by tempests in crossing the lake, and "drowned in entire flocks." Vast numbers of Eagles and Buzzards were seen feeding upon them.

Some of the Pigeons may have been driven by persecution to the Far North to breed, in the latter part of the nineteenth century, and they may have been destroyed by unseasonable storms, for many species are subject to periodical reduction by the elements; but the whole history of the last thirty years of the existence of the Passenger Pigeon goes to prove that the birds were so persistently molested that they finally lost their coherence, were scattered far and wide, and became extinct mainly through constant persecution by man. While they existed in large colonies, the orphaned young were taken care of by their neighbors. This communal habit of feeding preserved the species so long as the birds nested in large colonies; but when they became scattered the young starved when their parents were killed.

The Passenger Pigeon was not a suspicious bird, as birds go: it was easily taken. It

reproduced slowly, laid but few eggs, and, when its innumerable multitudes were reduced and its flocks were dispersed, the end came rapidly.

It often is asked how it was possible for man to kill them all. It was not possible, nor was it requisite that he should do so, in order to exterminate them. All that was required to bring about this result was to destroy a large part of the young birds hatched each year. Nature cut off the rest. She always eliminates a large

Photo by R. W. Shufeldt

THE LAST PASSENGER PIGEON

She died in the Cincinnati Zoological Park in 1914

share of the young of all creatures. The greater part of the Pigeons taken in summer and fall were young birds. The squabs were sought because they brought a high price in the market. The young when out of the nest were less experienced than the adults, and therefore more easily taken. Sometimes the Pigeons were so harassed that all their nestings were broken up, and few young were raised that season; thus the natural increase was practically cut off, and constant diminution was assured. Extermination must have resulted under such conditions, even if no man ever killed an adult Passenger Pigeon. The Pigeons were not immortal. Even if undisturbed by man, they "gave up the ghost" in a few years; but they were not undisturbed. No adequate attempt to protect them was made until they practically had disappeared. Whenever a law looking toward the conservation of these birds was proposed in any State, its opponents argued before the legislative committees that the Pigeons "needed no protection"; that their numbers were so vast, and that they ranged over such a great extent of country, that they were amply able to take care of themselves. This argument defeated all measures that might have given adequate protection to this species. That is why extinction finally came quickly. We did our best to exterminate both old and young, and we succeeded. The explanation is so simple that all talk of "mystery" seems sadly out of place here.

Ornithologists believe that the migrations of this Pigeon were made mainly in pursuit of food, and with little reference to the seasons of the year. Undoubtedly, however, the tendency was to migrate north in the spring and south in the fall, like other birds of passage. Some of the pigeoners say that the Pigeons nested in the southern States in winter; but of this there is no authentic record.

The accounts of the early settlers in Massachusetts show that there was a northward migration of Pigeons through New England in March, and they sometimes lingered about Hudson Bay until December, feeding on the berries of the juniper. The roosts of the Pigeons were so extensive and the birds frequenting them were so numerous that it was necessary for them to fly long distances daily in order to secure food enough for their wants. In migration their flight was very high and swift. Audubon estimates that they flew a mile a minute, and others have asserted that they sometimes traveled 100 miles an hour. This was probably an exaggeration.

In searching for food in a country where it was plentiful, the birds flew low, and, upon reaching good feeding ground, swung in large circles while examining the place. Some flocks were composed of young birds, others were mostly males, and still others almost entirely females.

Their roosting places were preferably in large and heavy timber, sometimes in swamps. In

most of the larger roosts, the trees, undergrowth, and all vegetation on the ground were soon killed by a heavy deposit of guano. About sunset the Pigeons in all the country for many miles around began to move toward the roost, and soon after sundown they commenced to arrive in immense numbers, some from a distance of 100 miles or more. Birds poured in from all directions until after midnight, and left the roost again at sunrise.

Audubon says that a messenger whom he sent out from a Pigeon roost reported to him that the uproar of the birds arriving could be heard three miles away. A most remarkable attribute of the Pigeon was its disregard of the presence of human beings in its roosting and nesting places. Any one who entered quietly one of these spots when the birds were there would be surrounded by the unsuspicious creatures in a few minutes. The nests formerly were placed in trees of great height, in some locality near water, where food was plentiful; but after the primeval forests were cut off, the Pigeons nested sometimes in low trees. This contributed to their doom. The best description of the nesting of these birds that I have seen is given by Chief Pokagon, in the *Chautauquan*. He was a full-blooded Indian, and the last Pottawottomi chief of the Pokagon band. He says:

"About the middle of May, 1850, while in the fur trade, I was camping on the head waters of the Manistee River in Michigan. One morning on leaving my wigwam I was startled by hearing a gurgling, rumbling sound, as though an army of horses laden with sleigh bells was advancing through the deep forests toward me. As I listened more intently, I concluded that instead of the tramping of horses it was distant thunder; and yet the morning was clear, calm and beautiful. Nearer and nearer came the strange commingling sounds of sleigh bells, mixed with the rumbling of an approaching storm. While I gazed in wonder and astonishment, I beheld moving toward me in an unbroken front millions of pigeons, the first I had seen that season. They passed like a cloud through the branches of the high trees, through the underbrush and over the ground, apparently overturning every leaf. Statue-like I stood, half-concealed by cedar boughs. They fluttered all about me, lighting on my head and shoulders; gently I caught two in my hands and carefully concealed them under my blanket.

"I now began to realize they were mating, preparatory to nesting. It was an event which I had long hoped to witness; so I sat down and carefully watched their movements, amid the greatest tumult. I tried to understand their strange language, and why they all chatted in concert. In the course of the day the great onmoving mass passed by me, but the trees were still filled with them sitting in pairs in convenient crotches of the limbs, now and then gently fluttering their half-spread wings and uttering to their mates those strange, bell-like wooing notes which I had mistaken for the ringing of bells in the distance.

"On the third day after, this chattering ceased and all were busy carrying sticks with which they were building nests in the same crotches of the limbs they had occupied in pairs the day before. On the morning of the fourth day their nests were finished and eggs laid. The hen birds occupied the nests in the morning, while the male birds went out into the surrounding country to feed, returning about 10 o'clock, taking the nests, while the hens went out to feed, returning about 3 o'clock. Again changing nests, the male birds went out the second time to feed, returning at sundown. The same routine was pursued each day until the young ones were hatched and nearly half-grown, at which time all the parent birds left the brooding grounds about daylight. On the morning of the eleventh day after the eggs were laid, I found the nesting grounds strewn with egg shells, convincing me that the young were hatched. In thirteen days more the parent birds left their young to shift for themselves, flying to the east about sixty miles, when they again nested. The female lays but one egg during the same nesting.

"Both sexes secrete in their crops milk or curd with which they feed their young until they are ready to fly, when they stuff them with mast and such other raw material as they themselves eat until their crops exceed their bodies in size, giving to them an appearance of two birds with one head. Within two days after the stuffing they become a mass of fat — "a squab." At this period the parent bird drives them from the nests to take care of themselves, while they fly off within a day or two, sometimes hundreds of miles, and again nest.

"It has been well established that these birds look after and take care of all orphan squabs whose parents have been killed or are missing. These birds are long-lived, having been known to live twenty-five years caged. When food is abundant they nest each month in the year."

It seems improbable, however, that they bred

in winter. The nesting usually occupied four or five weeks. The female, when sitting, never left the nest until the flight of males returned, when she slipped away, just as her mate reached the nest. Thus the eggs were kept covered all the time. The adult birds never ate the nuts and acorns in the immediate vicinity of the nesting place, but went to a distance for their food, and left the mast in the neighborhood for the young to feed on when they came out of the nest. It is said that for miles around there were no caterpillars or inchworms in the oak woods for several years after a nesting, as the adults secured practically all of them for the young, thereby protecting the forests against their insect enemies. When the young were first pushed out of the nest by the parents, they went to the ground, and fed mainly in the lower parts of the woods until they became expert in flying. They passed over the ground, the lower ranks continually flying over those in front, scratching out all the edible material, those flying overhead striking off the nuts as they flew by. The young birds were able to reproduce their kind in about six months.

Chief Pokagon asserts that while the old birds were feeding they always had guards on duty, to give an alarm in case of danger. The watch bird as it took flight beat its wings together in quick succession, with a sound like the roll of a snare drum. Quick as thought each bird repeated the alarm with a thundering sound, as the flock struggled to rise, leading a novice to imagine that a cyclone was coming.

In feeding, the birds were very voracious. They scratched among the leaves and unearthed every nut or acorn, sometimes almost choking in their efforts to swallow an unusually large specimen. During the breeding season they were fond of salty mud and water, and the pigeoners, learning of this, were accustomed to attract the birds to their death by salting down "mud beds," to which the poor Pigeons flocked in multitudes, and over which, when they were assembled, the pigeoners threw their nets.

The food of the Pigeons consisted mainly of vegetable matter, except for the grasshoppers, caterpillars and other insects, worms, snails, etc., which they ate, and which they fed to their young. Acorns, beechnuts and chestnuts, with pine and hemlock seeds, were among their principal staples of supply. They also fed on the seeds of the elm, maple and other forest trees. Buckwheat, hempseed, Indian corn and other grains, cherries, mulberries, hollyberries, hackberries, wild strawberries, raspberries and huckleberries, and tender shoots of vegetation, all attracted them. They sometimes went to the Barren Grounds in the far North in vast numbers, to feed on blueberries. They often descended upon the fall-sown wheat and rye fields in such numbers that the farmers had to watch their fields, or lose their crops. Oats and peas were favorite foods. No doubt they also fed largely on the seeds of weeds, as the Mourning Doves, Bob-whites, and many other terrestrial feeders do; but I find no record of this. They were fond of currants, cranberries, and poke berries, and no doubt of many other kinds of berries, and rose hips. We know little of their food habits, for no scientific investigation of their food ever was made.

EDWARD HOWE FORBUSH, in *Game Birds, Wild-Fowl and Shore Birds.*

MOURNING DOVE

Zenaidura macroura carolinensis (*Linnæus*)

A. O. U. Number 316 See Color Plate 42

Other Names.— Carolina Dove; Wild Dove; Turtle Dove; Dove.

General Description.— Length, 12½ inches. Prevailing color above, grayish-blue; below, reddish-fawn. Tail, longer than wing, strongly graduated, consisting of 14 relatively narrow and tapering feathers.

Color.— ADULT MALE: Forehead and over eye, fawn color usually paler on front of forehead, passing into dull slate-gray on back of head; hindneck, brownish-gray, the lateral portions (sometimes also lower portion) highly glossed with metallic purplish-bronze; back, shoulders, upper tail-coverts, wing-coverts, and inner secondaries, grayish-brown; the rump similar but usually grayer, passing into slate-grayish laterally; these secondaries, usually also greater coverts, with a number of rather large square and roundish black spots; outer secondaries, primaries, primary coverts, neutral-gray, the primaries narrowly edged with white, these edgings

broader on outermost quills; middle pair of tail-feathers similar in color to back, but usually rather grayer, sometimes darkening terminally; next pair, grayer with a dusky bar (usually oblique) across middle portion of inner web; third pair, similar but with the dusky (or black) bar more distinct, extending across part of outer web (the bar more or less V-shaped); fourth and fifth pairs, with the black bar broader, extending entirely across both webs, and with the gray of ends passing into grayish-white terminally; sixth pair, similar to fifth but ends mostly white; seventh (outermost) pair, similar but with outer web entirely white; general color of under parts reddish-fawn color, deeper (sometimes nearly fawn color) on foreneck and chest, becoming much paler on chin and upper throat, behind passing through light pinkish-cinnamon on abdomen and pinkish-buff on anal region to cartridge-buff on longer under tail-coverts; sides of head, similar in color to forehead but sometimes slightly paler, relieved by *a small spot of black, glossed with blue on side of head;* sides and flanks and under wing-coverts, clear bluish-gray; bill, black, the mouth lake-red, the tumid nasal valves somewhat glaucous; iris, dark brown; bare eye space, pale blue, tinged above eye with pale green; legs and feet, lake-red. ADULT FEMALE: Similar to the adult male but coloration duller; less reddish below, where passing into or tinged with light drab on foreneck and chest; black spots on secondaries and wing-coverts larger and more numerous, the shoulders sometimes with a few black spots or broad streaks; metallic gloss on sides of neck more restricted and less brilliant, and black head spot smaller and without blue gloss.

Nest and Eggs.— NEST: Placed in trees (usually low down), bushes, cactus, dense brier thickets, or on ground or on cliff; a frail structure of twigs, so flat that the fact that the eggs do not roll off oftener is remarkable. EGGS: 1 or 2, white; 2 and sometimes 3 broods in a season.

Distribution.—North America; breeds from British Columbia, Saskatchewan, Manitoba, Ontario, and southern Nova Scotia south throughout the United States and Mexico, and locally in Lower California, and Guatemala; winters from southern Oregon, southern Colorado, the Ohio valley, and North Carolina to Panama; casual in winter in Middle States.

MOURNING DOVE
(⅛ nat. size)

It is frequently mistaken for the extinct Passenger Pigeon

Drawing by R. I. Brasher

The best-known characteristic of the Mourning Dove is its call — it can hardly be considered a song — which may suggest hopeless sorrow, or the tenderest love and devotion, according to the mood of the listener. Another peculiarity which attaches to the bird is the fact that it is frequently mistaken, by untrained observers, for the probably altogether extinct Passenger Pigeon. Indeed, probably all of the "Passenger Pigeons" reported during the past twenty years have been Mourning Doves; this, at least, has so often proved to be the case that ornithologists take little interest nowadays in announcements that a flock of the Pigeons has been seen.

The nest of this bird is an astonishingly poor makeshift, composed chiefly of a handful of twigs thrown together so loosely that the eggs are in danger of rolling out of it, or falling through the interstices. Neither the hopeless woe nor the love-sick hypothesis nor both seem to account for this slovenliness. Very likely if the birds employed some of the time and ardor they usually put into billing and cooing in trying to construct a safe and substantial home, the result would be a better nest; but after all their poor workmanship is probably due primarily to the fact that both their bills and their feet are ill-adapted to nest-building.

A peculiarity by means of which the Mourning Dove may certainly be identified, is the sharp whistling of its wings while it is in flight. Another distinctive habit of the bird, especially during the mating and nesting season, is that of the male in rising from its perch, with violent flapping of wings (which, like those of the do-

mesticated pigeon, seem to strike over his back), and flying at a sharp angle to a height of a hundred feet or more, when the flight ceases and the bird returns to the same or another perch, by sailing on motionless wings which are usually held at a downward angle, like those of a gliding Snipe or Sandpiper. This performance seems to be purely a sexual manifestation intended to impress the female.

The breeding habits of this bird present several peculiarities. It is one of the earliest of spring arrivals, its appearance being about contemporaneous with the Robin, Bluebird, and Meadowlark. The breeding period — within the bird's normal northern habitat — extends virtually from May to September. Incubation occupies about two weeks and three or even four broods are reared in a season. An Ohio observer reports that he has found the birds incubating in that State during every month excepting December and January, and that he has found fresh eggs in a nest still occupied by birds not mature enough to fly. Another peculiarity is the parent bird's manner of feeding her young, which is done by regurgitation; that is, the young take their food, mixed with a light-colored fluid called "pigeon's milk," from the crop of the parent. The young are slow to develop their power of flight, and so it happens that the mother bird is often seen sitting crosswise on the nest with the heads and tails of her infants protruding on either side of her body.

Apparently because of the strong and swift flight of the Mourning Dove, it was for many years considered a "game" bird in several of the States, especially in the South. Under the Federal Migratory Bird Law of 1913, however, it was classed as a migratory bird, and in that character was given the protection to which it is entitled. GEORGE GLADDEN.

Photograph by A. A. Allen

A MOURNING DOVE BROODING ITS YOUNG

The Mourning Dove is one of the most useful of birds; it feeds extensively on weed seeds, frequently eating insects, especially grasshoppers, but on the whole preferring a vegetable diet. It has been accused of injuring ripening peas but this accusation has not been substantiated.

Photograph by C. M. Oswalt Courtesy of Outing Publishing Co.

NEST AND EGGS OF MOURNING DOVE

The nest is an astonishingly poor makeshift, composed chiefly of a handful of twigs loosely thrown together

WHITE-WINGED DOVE

Melopelia asiatica (*Linnæus*)

A. O. U. Number 319

Other Name.— Singing Dove.

General Description.— Length, 12 inches. Prevailing color above, gray; below, brown on breast and gray on abdomen. Tail shorter than wing, moderately rounded, consisting of 12 feathers, these broader terminally; wing rather large and pointed.

Color.— Head, fawn color, paler in front and passing into a much darker hue (sometimes approaching dark purple-drab) on crown and back of head; hind-neck, similar in color to back of head but somewhat lighter; back, shoulders, and wing-coverts, plain deep buffy-brown, light sepia, or umber; the middle pair of tail-feathers (sometimes longer upper tail-coverts also) similar, sometimes more decidedly brown; *outer wing-coverts, mostly white forming a conspicuous elongated patch from bend of wing to extremity of greater coverts,* the latter with basal portion gray, as are also the coverts along inner margin of the white area; primaries, primary coverts, and outer secondaries, dull black, the outer webs of secondaries, broadly edged with white at the tips, the primaries very narrowly edged with white (except basally) and margined terminally with light or pale brownish-gray; rump, light slate-gray or dark gull-gray, usually tinged with buffy-brown; the upper tail-coverts, either wholly brown or mixed brown and gray; tail-feathers (except middle pair), slate-gray very broadly tipped with very pale gray to grayish-white, and crossed by a band of slate-black or blackish-slate between the paler and darker areas; a spot below the eye of blue-black or black glossed with steel-blue; sides of neck, glossed with metallic reddish-bronze to greenish-bronze; sides of head and neck, throat, fore-neck, chest, and upper breast (sometimes whole breast), wood-brown, paler (sometimes dull whitish) on chin and upper throat, passing into pale gray on posterior under parts, including under tail-coverts; the anal region, white; sides and flanks and under wing-coverts, deeper gray; under surface of tail, slate-black broadly tipped with white or grayish-white; bill, black; iris, orange to orange-red or coral-red; bare eye-space, pale grayish-blue to campanula-blue; legs and feet, lake-red.

Nest and Eggs.— Nest: In bushes or low trees; a slight frail structure of sticks and weeds. Eggs: 2, creamy-white.

Distribution.— Eastern Cuba; southern Bahamas; Haiti; Jamaica; Old Providence Island; and lower Rio Grande valley in Texas; southward through Mexico, Central America, and Panama(?) Occasional in southern Florida, Louisiana, and south-central Texas.

The White-winged Dove has been credited with a trick of lying very close when it is on the ground, in fact till it is almost stepped on, and then taking flight with a whirring of wings; but Mr. W. L. Finley says that in the three months he once spent in the neighborhood of Tucson he did not notice this habit. (MS.)

The characteristic note is Owl-like rather than Dove-like, which is to say it is bold and emphatic rather than timid and melancholy or lovesick. In uttering it the Dove inflates its throat as does a Pouter Pigeon. "Mr. Herbert Brown said the peculiar note of the White-winged Dove always reminded him of the crowing of a young rooster just learning. He was deceived entirely the first time he heard it; he was satisfied he was near a farm house, but upon investigation, he found no one living in the locality, but he did discover a Dove that was doing the crowing." (W. L. Finley, MS.)

Its note, its numbers, and its whirring flight make the White-winged Dove perhaps the best known bird of the torrid cactus deserts and mesquite valleys of the southwest.

In its flight the white bands on the bird's wings and tail are plainly visible.

GROUND DOVE

Chæmepelia passerina terrestris (*Chapman*)

A. O. U. Number 320

Other Name.— Mourning Dove.

General Description.— Length, 6½ inches; smallest of American Doves. Color above, grayish-brown; below, grayish-reddish. Wing moderate with rounded tip; tail from ⅔ to ¾ length of wing, decidedly rounded, with 12 feathers, these relatively broad and with broadly rounded tips.

Color.— Forehead, front of crown, sides of head and neck, and under parts, light grayish-reddish, paler on chin and upper throat, deepening into pinkish light purple-drab on chest, and passing into brownish-gray behind, the under tail-coverts paler on margins; feathers on sides of head and neck and lower throat narrowly margined with darker, those of foreneck and chest more broadly or more distinctly margined, and with a central broadly wedged-shaped spot of dusky; rear of crown, back of head, and hindneck, bluish-gray, the feathers narrowly margined with dusky; back, shoulders, inner secondaries, front lesser wing-coverts, rump, and upper tail-coverts, plain grayish-brown; wing-coverts (except front lesser coverts), similar in color to chest, etc., passing into a more grayish hue on greater coverts, the inner coverts with spots (the rear ones wedge-shaped and oblique) of metallic blackish-purple; outer secondaries dull brownish-black, narrowly edged with paler; primary coverts, dull black with basal half chestnut; primaries, chestnut with terminal portion and outer webs (except basally) of longer quills, dull black, the shorter primaries tipped and edged with black; middle tail-feathers, brownish-gray; the rest, dull black, the outermost ones margined terminally (especially on outer web) with whitish; bill, coral-red or orange-red, dusky at tip; iris, orange-red; legs and feet, flesh-color or pink.

Nest and Eggs.— NEST: On the ground or from 2 to 20 feet above it in bushes, stumps, vines, or small trees; simply a few curved twigs with the addition sometimes of pine-needles. EGGS: 2, pure white or creamy white.

Distribution.— Florida, including Keys, South Carolina, and westward near the Gulf coast through Alabama to Louisiana into western Texas, southern Arizona and Lower California; occasional or casual northward to North Carolina, Virginia, District of Columbia, Maryland, Pennsylvania, New Jersey, New York City, and Tennessee.

The Ground Dove is the smallest of the North American Pigeons. It is a dainty, trusting little bird and often allows one to walk within a few yards of it before taking flight. The larger part of its life is spent on the ground, where it seems to obtain all its food. On short legs it walks sedately along in a rather rapid manner, prettily bobbing its head as it goes, and picking up seeds of grass and weeds by the way. It does not occur north of North Carolina and is rare in that State. It increases in numbers as one advances farther south, and reaches its greatest abundance in Florida, where it is found in most parts of the State. Elsewhere in the East it lives mainly near the coast. It is distributed along the Gulf coast in suitable localities as far west as Texas.

In the more open places in the woods as well as about lakes and on plantations you may come across it almost anywhere. In many towns it

lives in numbers and in companies of twos or threes frequent the gardens and quiet streets. Throughout the spring and summer its soft cooing notes are repeatedly heard issuing from the orange trees or grape-vines. Its soft plaintive note has won for it the name of "Mourning Dove" by many people who in turn give the name "Turtle Dove" to the species to which this name rightfully belongs.

The breeding season of few birds extends over such an unusually long period. I have found nests with fresh eggs as early as February 28, and every month afterward until September 26. It is rather curious that an entirely different character of nesting site seems to be chosen at different times of year. The nests I have found in the early spring were always on the top of rotting stumps. Later nearly all nests discovered were on the ground in grain-fields or weed patches, the one exception being nests found on the fronds of cabbage palmetto trees. In the months of July, August, and September, of more than forty nests examined, all were either on the larger boughs of orange trees, or resting on the horizontal supports of scuppernong grape-vines. These notes were made over a period of six years' observation in Alachua County, Florida. The nest is always a simple affair of dried grasses with occasionally small twigs for support. Two white eggs are laid. The young are fed by the process of regurgitation.

We might expect this little Dove to be the personification of gentleness, but the contrary condition is often apparent. Frequently they wage battles among themselves, in which, however, nobody ever seems to get hurt. They will also attack, without hesitation, almost any other bird that they think is trying to deprive them of their food.

A very similar allied species, known as the Mexican Ground Dove (*Chæmepelia passerina pallescens*) is found in the desert regions of the southwest. Their simple nests are often built in the mesquite trees growing along the dry arroyos.

Ground Doves are seldom disturbed by the people of the country they inhabit; in fact, many superstitious negroes have solemnly assured me that it would bring the worst kind of bad luck to anybody who should be so unwise as to kill one.

T. Gilbert Pearson.

Photograph by W. L. Finley Courtesy of Nat. Asso. Aud. Soc.

MEXICAN GROUND DOVE

She raised her wings and spread her tail in anger

INCA DOVE

Scardafella inca (*Lesson*)

A. O. U. Number 321

Other Name.— Scaled Dove.

General Description.— Length, 8 inches. Color above, grayish-brown; below, grayish-red and buff. Tail, as long or longer than wing, double rounded, with 12 feathers, all relatively narrow and tapering terminally; wing, rather short and much rounded.

Color.— General color of upper parts, grayish-brown passing into pale écru-drab on forehead, the wing-coverts, paler grayish-brown, sometimes dull grayish-white, especially on outer coverts; each feather of crown, back of head, hindneck, back, shoulders, wing-coverts, rump, and upper tail-coverts, rather broadly margined terminally with sooty-black, producing *a conspicuous barred or scaled effect;* primary coverts, chestnut broadly margined terminally with black; primaries, chestnut with terminal portion dark grayish-brown, this increasing in extent on outer webs of outermost quills; outer secondaries, chestnut broadly edged and tipped with dusky, the more inner ones mostly dusky, with pale edgings; middle pair of tail-feathers grayish-brown, usually tipped with dusky; second pair, similar but with tip more extensively dusky, the third with still more of dusky and, usually with white on terminal portion; remaining tail-feathers, dull black or dusky passing into grayish-brown basally and broadly tipped with white, the white increasing in extent toward the outermost, on which it occupies approximately the outer half of inner web and two-thirds, or more, of outer web; sides of head and neck, foreneck, and chest, pinkish pale écru-drab to dull pale grayish-red, passing into dull white on chin and upper throat and into very pale buff on rear under parts, the feathers (except on chin and throat, rarely foreneck also) margined terminally with sooty-black, the bar thus formed broadest on sides and flanks, narrowest (often very narrow, sometimes obsolete) on chest and foreneck; bill, blackish; iris, dull orange to bright red; legs and feet pale flesh color to carmine-pink.

Nest and Eggs.— NEST: In bushes, frequently close to houses, a rather (for the genus) well-built platform of twigs. EGGS: 2, white.

Distribution.— Southern Texas, southern Arizona, and Lower California and southward through Mexico, Guatemala, and Honduras to Nicaragua.

The little Inca Dove, like its much larger White-winged relative, often seems very tame or very stupid, for it is likely not to take wing (where it has not been molested) until it is almost trodden upon. In fact, where it comes much in contact with human beings, it becomes about half-domesticated. This is especially the case in farming country where the bird trots around in barnyards or along the roads, busily picking up grain or weed seeds, and uttering meanwhile a hard and quite undovelike note.

The following is from Mr. W. L. Finley's Arizona notes on the Inca Dove: "One cannot live in Tucson for a day without making the acquaintance of the little Inca Dove. This diminutive member of the Dove family was formerly a home dweller in the cactus and mesquite, but in later years has taken on civilization and is scarcely found outside the city limits. He likes a tree that borders a city lawn, and he likes to make love on a telephone wire, dropping down to the dooryard for his dinner and making himself at home with the chickens.

"We heard the Inca before we saw him. We did not have to listen; we could not help hearing him from dawn till dark. Of all wooing birds, this Dove is the most constant. A pair of lovers will sit on the telephone wire by the hour and keep up a mournful cooing, that to some people is positively disconcerting. But all the world should love a lover. The song is really more suggestive of a funeral procession than of a wedding journey." (MS.)

GEORGE GLADDEN.

Appearance of Diurnal Birds of Prey in Flight

TURKEY VULTURE
DUCK HAWK
COOPER'S HAWK
MARSH HAWK-FEMALE
BALD EAGLE
RED-TAILED HAWK
ROUGH-LEGGED HAWK
OSPREY

ORDER OF BIRDS OF PREY

Order *Raptores*

BECAUSE of their rapacious habits, more than because of their physical characteristics, these birds have been grouped in one order. Each member of the order is equipped with a strongly hooked bill with a soft area or cere at the base. The only other birds that have similar bills are the Parrots, but these latter have their toes arranged differently, being "yoke-toed," or having two toes pointed forward and two backward, while the Birds of Prey either have three toes permanently pointed forward, as in the Eagles, or the outer toe may be turned at will to the front or to the back, as in the Owls.

Three suborders are recognized. The first is that of the American Vultures (*Sarcorhamphi*), or Carrion-feeders—thus separated from the others because, not having feet suitable for the slaughter of living prey, they feed upon dead or dying animals, and because they have the head and part of the neck without feathers. It includes but one family. Both the second and the third suborders have the head well feathered. In the suborder Diurnal Birds of Prey (*Falcones*) the eyes are placed at the sides of the head so that the two eyes never look in the same direction. The third suborder is the Owls (*Striges*), birds which have the eyes directed forward, so that both look in the same direction, and surrounded by disks of radiating feathers. The Owls are divided into two families, the Barn Owls and the Horned Owls. The Diurnal Birds of Prey include three families: the Eagles, Hawks, and Kites; the Falcons, Caracaras, etc.; and the Ospreys.

VULTURES

Order *Raptores;* suborder *Sarcorhamphi;* family *Cathartidæ*

THE Vultures comprise a New World family named *Cathartidæ* from a Greek word meaning "cleanser" or "scavenger." The nine species in this group live chiefly upon decaying flesh, and never attack living animals excepting—and this very rarely—creatures which are disabled or are dying of disease or injuries. They range from the tropics northward to temperate America—in the case of the common Turkey Vulture—and include the great Condor of the Andes, which is exceeded in wing extent only by the California Vulture—now almost extinct—and the Wandering Albatross.

The bill is stout, blunt, and hooked; the talons are dull and only slightly curved, and the feet are clumsily formed and not adapted to seizing and killing or holding prey, as are those of the Eagles, Hawks, and Owls. The wings are broad and have eleven primaries and from twelve to twenty-five secondaries. The tail is rounded or even with from twelve to fourteen quill feathers. The head and long neck of the adults usually are bare, though in the King Vulture a short down covers the neck and extends to the crown of the head. This bare skin is rough and is frequently brightly colored. The eyes usually are conspicuous. The plumage and size of the sexes are alike. The Vultures walk when on the ground instead of hopping. Their attitude gives the impression of listlessness.

The Vultures build no nests, but lay one, two, or three eggs in rock cavities, caves, hollow trees or stumps, or on the ground. The eggs, may be greenish, white, or

buff and with or without markings of gray or reddish-brown. The young are naked when hatched, but very soon they are covered with a white or buff down. They are fed sometimes by regurgitation; and the adults have a habit, when frightened or angered, of vomiting exceedingly offensive smelling matter. Turkey Vultures and Black Vultures sometimes roost in company, but speaking generally the Vultures are not gregarious.

All Vultures are famous for their majestic flight and for their marvelously keen eyesight, which, rather than their sense of smell, enables them to discover their food. By making perfect use of the air currents one of these great birds will mount for thousands of feet, or soar for hours at a time, without once flapping its wings.

CALIFORNIA VULTURE

Gymnogyps californianus (*Shaw*)

A. O. U. Number 324

Other Names.— California Condor; Queleli.

Description.—Length, 4 to 4½ feet; spread of wings, 9 to 11 feet. Wings, long, folding beyond end of square tail; head and neck, bare; skin, smooth, yellow or yellowish-orange and red; plumage, sooty-blackish commencing over shoulders with a semi-ruff of linear feathers, those underneath of similar character but less clearly defined; the feathers of upper parts with browner tips; wings and tail, black; outer webs of greater wing-coverts and secondaries grayish; wing-coverts and outer secondaries edged with whitish; *under wing-coverts, pure white;* bill, dark brown changing gradually to dull reddish on cere; iris, deep red; feet, horn with a patch of red on knees.

Nest and Eggs.— Nest: A recess among rocks in most inaccessible mountains, more rarely in hollow of a stump or tree trunk. Eggs: 1 or 2, plain greenish-white, unmarked.

Distribution.— Coast ranges of California from Santa Clara County south to northern Lower California; casual north to southern Oregon and east to Arizona; formerly north to Columbia River.

The California Vulture is as large as the Condor of the Andes and when full-grown will measure nine to eleven feet from tip to tip of the wings when they are spread. It differs from its South American brother in dress. Its head and neck are bare and brilliantly colored in orange and red. Its coat is plain brown or blackish. It will weigh from twenty to twenty-five pounds. The Condor seldom, if ever, attacks living creatures; it always plays a waiting game. It never carries food in its talons, because its foot is not made like the Eagle's for gripping and carrying prey. No bird is gentler in disposition or more affectionate in his home life.

The range of the California Condor is more restricted than that of any other bird of prey. The few left in the wild state live almost entirely in the coastal mountainous regions of southern California and a part of Lower California. Unless careful protection is given these few Condors remaining in the these wild mountainous regions, this largest of flying birds will soon cease to be a part of the natural history of California.

If you were to start on a hunt for the California Condor, you might search for years, as we did, without success. In the whole world's collections, less than a dozen of these birds are to be seen alive. In the various museums of the world, one can find almost twice as many eggs of the Great Auk, a bird now extinct, as of this Condor.

The main cause which has been given for the decrease in Condors seems to be that when stock-raising became common in California years ago, the rangers were compelled, in order to secure pasture during the dry months, to drive their herds back into the more remote mountainous parts. Here they invaded the retreats of panthers, grizzlies, and coyotes. These preyed upon the calves and sheep and did considerable damage. The quickest and best device for getting rid of these animals was by baiting carcasses with poison. The Condors came to feed upon the poisoned animals and large numbers of the big birds were undoubtedly killed in this way.

William L. Finley.

Photo by W. L. Finley and H. T. Bohlman

A PAIR OF CALIFORNIA VULTURES

For years Mr. Finley and Mr. Bohlman searched for living birds of this species. They were rewarded by obtaining this remarkable picture

TURKEY VULTURE

Cathartes aura septentrionalis *Wied*

A. O. U. Number 325 See Color Plate 43

Other Names.— Carrion Crow; Turkey Buzzard.

Description.— Length, 2½ feet; spread of wings, 6 feet. Tail, long, and rounded; wings, when folded, reaching to or beyond the tip of tail; head and upper part of neck, entirely bare or with only a few bristles, and with skin deeply corrugated. ADULTS: Head and upper neck of a *reddish tinge* and some shades of blue and white; neck and upper parts, blackish glossed with green or purple; beneath, dull brownish-black; feathers above, broadly edged with dull-grayish brown; secondaries edged with gray; shafts of wing- and tail-feathers, pale brown or yellowish white; bill, dull whitish; iris, brown; feet, flesh-colored.

Nest and Eggs.— EGGS: Commonly 2, sometimes 1, and very rarely 3; laid, from February to June, in a cave, a cavity between rocks, in a hollow log, or on the ground; white or creamy, variously spotted with lavender or purplish brown blotches.

Distribution.— From southern Lower California and northern Mexico north to southern British Columbia, Saskatchewan, western Manitoba, northern Minnesota, southern Ontario, western and southern New York, and New Jersey; casual in Wisconsin, Michigan, northern Ontario, and New Brunswick; winters throughout most of its regular range in the East, but further west retires to California, Nebraska, and the Ohio valley.

The Turkey Vulture is ugly to the last degree, except in flight, but it is an invaluable health-protector in warm latitudes, where it exists on all forms of carrion, being guided to its food by a sense of sight — not smell. What it lacks in beauty and grace afoot it compensates for a-wing. Its circling form, on motionless, widely outstretched pinions, is seldom absent from the skyscape of its habitat as it soars in great circles, scanning the ground below. For hours at a time, in fair weather, it will remain on the wing.

There can be little question that its eyesight is

Photo by W. L. Finley and H. T. Bohlman

HALF-GROWN TURKEY VULTURE

He is ugly to the last degree except in flight

many times more powerful than human vision. Suddenly it will appear from nowhere in the sky above, coming directly downward to a dead animal no larger than a cat which it has seen, although it was out of sight itself. If one descends, others are discovered shooting in long slants toward the spot; these in turn are followed by others until all the Vultures which were in the air for many miles around have congregated at the feast.

"The food of the Turkey Buzzard is mainly carrion, but it also eats snakes, toads, and probably rats, mice, and occasionally young birds that chance to fall in its way. It does not, however, attack poultry or game birds, nor does it regularly search for and destroy the nests of other birds. On the whole it is a beneficial species and should be rigorously protected." (Barrows.)

At Cocoanut Grove, Florida, we amused ourselves by catching some of these ungainly birds with a lasso laid on the ground and encircling some bait. A number fought to escape; others simulated death, remaining in an apparently unconscious condition for ten minutes at a stretch. We decorated them with paper collars and cuffs and a few bits of ribbon, then released them and they flew aloft like aërial mountebanks.

R. I. Brasher.

BLACK VULTURE

Catharista urubu (*Vieillot*)

A. O. U. Number 326

Other Names.— Black Buzzard; Carrion Crow; Black Scavenger.

Description.— Length, 27 inches; spread of wings, 4½ feet. Head, naked; feathers of neck extended up back of head in a point; wings, when folded, do not reach to the tip of the tail; compared with the Turkey Vulture, its tail is *decidedly shorter*, wing-strokes more frequent, is built more stumpily and weighs

Photo by H. K. Job

BLACK VULTURES

On the street in Charleston, South Carolina

more. ADULTS (SEXES ALIKE): Head and a part of the neck, covered with a *black* wrinkly and lumpy skin; general color of entire plumage, blackish; *shafts of primaries, white fading to dull gray at base*; bill, blackish, the tip, dull yellowish-white; iris, brownish-hazel; legs, grayish-white with black claws.

Nest and Eggs.— EGGS: 1 to 3, laid on the ground under the protection of logs or bushes or in rock cavities; pale greenish or bluish-white marked irregularly round the larger end with various shades of brown or brownish-purple; deposited from March to May.

Distribution.— From western Texas, Kansas, Illinois, Indiana, and southeastern Virginia, south through the Southern States, Mexico, and Central America to southern South America; casual in Ohio, New York, Maine, Quebec, New Brunswick, and Nova Scotia.

To the visitor for the first time in the South the appearance of that dusky scavenger the Black Vulture, calmly walking around in the streets as domesticated and as unafraid as the English Sparrow of northern cities, strikes him as a little odd.

The careful disposal of dead animals, so necessary in the North, is not required within bounds of this bird's habitat. Anywhere that animals are slaughtered will be found numbers of these Vultures waiting patiently on fences, roofs, or any convenient perch, for their share of offal. They are carefully protected, a heavy fine being imposed by law for their destruction. So universal is the recognition of their services that even without any lawful protection it is doubtful if any would be destroyed.

They are easy to distinguish, even at a distance and in the air, from the Turkey Vulture by the short squarish tail and more blocky outlines. Nearby the white under wing-coverts are distinctive.

EAGLES, HAWKS, AND KITES

Order *Raptores;* suborder *Falcones;* family *Buteonidæ*

THE Eagles, Hawks, and Kites comprise the family *Buteonidæ.* They are diurnal birds of prey. Like the Owls, the Falcons, and the Vultures, they have strongly hooked bills with a cere or waxlike membrane around the base. Their feet have three toes permanently pointed forward and one turned backward; the claws or talons are long, curved, extremely acute, and flexibly jointed to the toes. The tarsus is shorter than the tibia, scaled in front, and partly feathered. The leg is well feathered, usually below the knee joint, and the long feathers (the "flag") are well developed. The wings are ample and usually somewhat rounded in shape. The tail is variable as to relative length and shape but usually contains twelve feathers. In general appearance these birds are heavy. Their prey is killed by the sharp claws and torn to pieces with the bill.

The *Buteonidæ* are found both in the eastern and in the western hemisphere. In the United States and Canada are twenty species of regular or accidental occurrence.

Many of the species included in this family return to the same neighborhood and often to the same nest, year after year, and some are known to mate for life. They breed slowly, rearing but one brood a year, though, if the first set of eggs be destroyed, another will be laid. The period of incubation is about four weeks; the young when hatched are covered or partially covered with down, but before they leave the nest they are fully feathered.

The food habits and the economic value of these rapacious birds are thus summarized by Dr. A. K. Fisher: "The young grow slowly and need a relatively large amount of food. To satisfy their hunger requires constant foraging on the part of the parents, and the strain of rearing the family is probably twice that of any of the other land birds. Even the adults are large eaters, gorging to the utmost when the opportunity presents; and as digestion is very rapid and assimilation perfect, a great quantity of food in relation to the body weight is consumed every day. Hawks and Owls often swallow their smaller victims entire, and tear the larger ones into several pieces, swallowing each fragment as it is detached. After

Photograph by E. R. Sanborn

BALD EAGLE

A majestic bird, whether at rest or in flight

the nutritious portion of the food has been absorbed, the indigestible parts, such as hair, feathers, scales, bones, and other hard parts, are rolled into a solid ball by the action of the muscles of the stomach. These masses, known as 'pellets,' are regurgitated before fresh food is taken. The pellets contain everything necessary to identify the food. To the wholly beneficial class belong the large Rough-legged Hawk, its near relative, the Squirrel Hawk or Ferruginous Rough-leg, and the four Kites — the White-tailed Kite, Mississippi Kite, Swallow-tailed Kite, and Everglade Kite. The chiefly beneficial class contains a majority of our Hawks and Owls, and includes the following: Marsh Hawk, Harris's Hawk, Red-tailed Hawk, Red-shouldered Hawk, Short-tailed Hawk, Sennett's White-tailed Hawk, Swainson's Hawk, Short-wing Hawk, Broad-winged Hawk, Mexican Black Hawk, Mexican Goshawk, Sparrow Hawk, and Audubon's Caracara. The class in which the harmful and beneficial qualities balance includes the Golden Eagle, Bald Eagle, Pigeon Hawk, Richardson's Pigeon Hawk, Prairie Falcon, and Great Horned Owl. The harmful class comprises the Gyrfalcons, Duck Hawk, Sharp-shinned Hawk, Cooper's Hawk, and Goshawk."

SWALLOW-TAILED KITE

Elanoides forficatus (*Linnæus*)

A. O. U. Number 327

Other Names.—Swallow-tailed Hawk; Swallow-tail; Fork-tailed Kite; Snake Hawk.

General Description.— Length, 24 inches. Head and under parts, white; upper parts, black. Wings, long and reaching nearly to the tip of the deeply forked tail; feet, stout but very short, the tarsus feathered halfway in front; talons, short, well-curved, scooped out, and sharp-edged on the under surface. Outer tail-feathers about 8 inches longer than middle-pair.

Color.— Adults: *Crown, head, and neck all round, and entire under parts including under wing-coverts, pure snowy white;* back, wings, and tail, glossy-black with varying luster, principally violet and greenish-blue; shoulder feathers and lesser wing-coverts with a pronounced bronzy cast; bill, bluish black; cere, pale bluish; feet, pale bluish-green with light-colored claws. Young: Similar to adults, but with head and neck narrowly streaked with blackish, and most of dark flight feathers edged and tipped with white.

Nest and Eggs.— Nest: Usually in the top of tall trees near water courses; composed of dry twigs, sticks, hay, and occasionally moss. Eggs: 2 or 3, sometimes 4, white or buffy, boldly blotched and speckled, chiefly around the larger end in handsome patterns, with rich chestnut-brown and cinnamon.

Distribution.— North and South America; breeds locally from southeastern Saskatchewan, northern Minnesota, southern Wisconsin, southern Indiana, and South Carolina south through eastern Mexico and Central America to Peru, Bolivia, and Paraguay; accidental west to New Mexico and Colorado and north to northern Wisconsin, Ontario, New York, Maine, Massachusetts, and in England; casual in the Greater Antilles; winters south of the United States.

In Florida Everglades where the Miami River rises, I had the pleasure and satisfaction of studying those remarkable birds the Swallow-tailed Kites. Gifted with extraordinary wing and tail surfaces they live almost entirely in the air, floating, soaring, and circling with all the buoyancy and dash of their minor prototypes, the Barn Swallows, to whom they bear a singular resemblance in shape, color, action, and superlative wing power — in fact in nearly everything but size.

The three birds I observed were feeding on small snakes, apparently water moccassins, which were neatly snatched from their lurking places in the reeds and devoured on the wing. This aërial feeding was gracefully performed by a forward thrust of the talons holding the food, a mouthful being taken by bending the head suddenly downward. One of the birds carried aloft a small alligator, perhaps a foot long, but the morsel proved too obdurate and was dropped. At times they made long downward sweeps like the drop of Nighthawks, apparently in a spirit of play.

No other North American bird approaches the Swallow-tail in the grace and beauty of its flight; the Duck Hawk alone equals it in speed. The former conveys the impression of lightness in the air; the latter, of power and impetuosity.

Incubation starts in March in the southern

parts of its range and it may be as late as June in the northern districts.

Before migrating these Kites assemble in small companies, circling slowly in ascending spirals until sometimes out of eye-range like the maneuvers of the Red-tailed Hawks before leaving us in the autumn. Their call note is a high-pitched shrill *ke wee wee,* the first note short, somewhat like the cry of the Broad-winged Hawk.

The Swallow-tail feeds upon snakes, grasshoppers, wasp grubs, caterpillars, lizards, frogs and other small reptiles and he is not known to attack birds or quadrupeds. R. I. Brasher.

Drawing by R. I. Brasher

SWALLOW-TAILED KITE (¼ nat. size)

The most graceful in flight of all North American birds

WHITE-TAILED KITE

Elanus leucurus *(Vieillot)*

A. O. U. Number 328

Other Name.— Black-shouldered Kite.

General Description.— Length, 17 inches. Upper parts, light bluish-ash; under parts and tail, white. Wings, pointed and about twice as long as tail and when closed reach nearly to end of tail; two outer wing-quills notched; feathers of wings, broad and tips obtuse; feet, very small; tarsus, feathered half-way down in front; claws, small, little curved, and not grooved beneath.

Color.— Except top of head and tail, upper parts, light bluish-ash; lower parts, *top of head, and tail,* with the exception of the two center feathers, *pure white;*

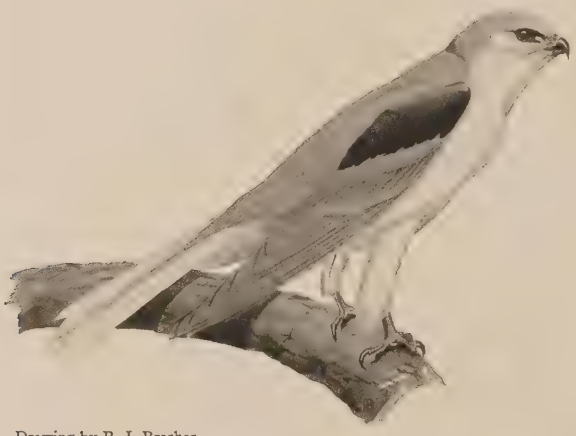
two center tail-feathers, a lighter ash than black; a *spot in front of eye* formed by bristly feathers and extending narrowly above the eye, and *a large patch on the shoulder* embracing lesser and middle wing-coverts, *deep black;* bill and claws, black; cere and feet, yellowish-orange; iris, deep carmine. YOUNG: Crown, nape, and upper parts generally thickly marked with broad streaks of dusky brown tinged with rufous; shoulders, umber-brown tipped with rusty; all wing-feathers, narrowly tipped with white; tail-feathers with a bar of dark ashy, near the tip; below, tinged with rusty and pale yellow-brown with elongated wedge-shaped spots of umber and blackish.

Nest and Eggs.— NEST: In the tops of trees, preferably live oaks; made of small twigs and larger sticks and lined with grass. EGGS: 3 to 5, dull whitish, so heavily marked over entire surface with blotches of red and mahogany-brown as usually to obscure the ground color.

Distribution.— North and South America; breeds in California, Texas, Oklahoma, South Carolina, and Florida; casual in southern Illinois, Louisiana, Mississippi, and Alabama; winters in California and Florida and south rarely to Guatemala; resident in South America from Argentina and Chile to Venezuela; accidental in Michigan.

All the Kites are birds of marked individuality and their identification in life is not difficult. The white square tail and black shoulders of the White-tailed Kite are quite distinctive field marks. Its favorite haunts are along the borders of streams and marshes, where it frequently perches on some tree overlooking its hunting grounds.

Its method of hunting is not unlike that of the Marsh Hawk — crossing over the fields or hovering almost stationary aloft like a Sparrow Hawk when it sees its game and dropping upon it like a plummet. Unlike the Swallow-tailed Kite, this species does not confine its food to insects and reptiles but preys sometimes on small birds and frequently on quadrupeds, especially field mice. Chipmunks, lizards, snakes, and grasshoppers are found on its menu.



Drawing by R. I. Brasher

WHITE-TAILED KITE (⅛ nat. size)

A fine flyer and a beautiful bird of the South and West

These birds are less likely to desert disturbed nests than the Swallow-tailed Kites. They utter plaintive calls of anxiety while their home and its neighborhood are under investigation. The nest is placed on a tree, usually near the water. R. I. BRASHER.

MISSISSIPPI KITE

Ictinia mississippiensis (*Wilson*)

A. O. U. Number 329

Other Name.— Blue Kite.

Description.— Length, 14 inches. Plumage, bluish-gray. Two outer primaries notched on inner web, next two with edge cut away but less abruptly; wings and tail, moderate in length; feet, short and stout; tarsus, scantily covered with feathers about half-way down in front; web partially connecting middle and outer toes; claws, stout and much curved; bill, small and sturdy; its upper cutting edge almost toothed.

Color.— ADULTS: Front of head, pure silvery white

shading into pale bluish-gray and this color grading imperceptibly into the *dark bluish-gray* of the entire upper and lower plumage; lores, eyelids and cere black; gape of mouth, orange; lesser wing-coverts, primaries, and upper tail-coverts, darker bluish-gray (almost black), the primaries tinged with chestnut rufous at base of inner and outer webs; tips of the secondaries, silvery white; *tail, nearly pure black;* bill, black; feet orange-yellow; iris, deep red. YOUNG: Head, neck, and lower parts, dull yellowish-white, each feather with a long oval spot of blackish-brown, more reddish-brown on lower portion; chin, throat, and a broad stripe over eye, white; upper parts, brownish-black, the feathers narrowly edged with yellowish-white; primary-coverts, secondaries, and primaries, sharply margined on ends with white; tail, black with three bands of more slaty tint, and corresponding rows of white spots on inner webs.

Nest and Eggs.— NEST: In high tree-top; usually an old nest of some other species remodeled with additional material and lined with Spanish moss or green leaves. EGGS: 2 or 3, pale bluish-green, usually unmarked but sometimes with faint spots or stains.

Distribution.— Southern Kansas, Iowa, Illinois, southern Indiana, and South Carolina south to Texas and Florida; winters in Florida and southern Texas and south rarely to Guatemala; accidental in Colorado, South Dakota, Wisconsin, and Pennsylvania.

Its uniform bluish-gray plumage, with darker wings and tail, easily distinguishes the Mississippi Kite in life.

This compact, well-built bird possesses much more courage and spirit than others of its kindred. Only the Swallow-tailed Kite surpasses it in flight power, but it is stronger and much more determined than that species. Its aërial performances are quite up to the Kite standard; it soars with motionless pinions in great circles, sweeps or dashes with vigor and grace, or hovers in the air watching for its humble quarry. It is a tireless flyer.

Although the almost toothed bill indicates an approach to falcon traits, it confines its captures to lizards, small snakes, frogs, grasshoppers, and particularly to a large species of beetle belonging to the cicada family. This latter it deftly picks from tree branches without ceasing its flight. Its food is eaten on the wing after the manner of the Swallow-tailed Kite.

R. I. BRASHER.

EVERGLADE KITE

Rostrhamus sociabilis (*Vieillot*)

A. O. U. Number 330

Other Name.— Snail Hawk.

General Description.— Length, 18 inches. Plumage, bluish-gray. Five outer primaries notched on inner webs; upper section of bill, lengthened and hooked.

Color.— ADULTS: Prevailing color, dark bluish-gray blackening on secondaries, primaries, and tail and with a tinge of brownish on wing-coverts and feathers of neck and head with a bluish-green shade; base of tail with upper and under-coverts, white increasing on tail in extent from the center to outside feathers; tail, tipped with a band of pale gray about an inch wide; bill and claws, black; base of bill, cere, and feet, bright orange; iris, red. YOUNG: Above, brownish-black with a chalky cast on back. Each feather rather broadly tipped with yellowish-rufous; crown and sides and back of head longitudinally streaked with the same; line over eye, sides of head and lower parts, dull ocher; throat and cheeks, streaked with dusky; other lower parts thickly marked with elongated spots of brownish-black; upper tail-coverts, white with black shaft lines; lower tail-coverts unmarked; tail with basal third white and a terminal band of brownish-ash.

Nest and Eggs.— NEST: In a bush, small tree, or clump of grass; a flat structure of sticks, grasses, old stalks, and leaves and lined with a few dried heads of saw-grass, the whole rather carelessly put together. EGGS: 2 or 3, dingy white, irregularly splashed, spotted, or blotched with yellow-brown, light olive-brown, and dark sepia.

Distribution.— Tropical Florida, Cuba, eastern Mexico, Central America, and eastern South America to Argentina; migratory in northern Florida.

The formation of the bill of the Everglade Kite enables it to extract from its shell the fresh-water snail (*Pomus depressus*) on which it feeds almost exclusively. This snail is very abundant in the shallow lagoons of the Everglades, and this Kite's distribution in the United States is confined to that region.

The birds usually resort to some eminence in

the "hammock" as a feeding station; to these spots the delicacies are carried, the snail dexterously removed from its armor, and the empty shell left with others. Amid the wastes of sawgrass, palmetto, and cypress, inhabited only by a remnant of the Seminole tribe of Indians, may be found heaped-up mounds of these empty shells.

On the corduroy road built by General Taylor during the Seminole war and which extends into the almost impassable area of the 'glades west of where the town of Palm Beach now stands, I found several of these curious shell mounds, but I saw only one pair of birds. They were very tame, permitting me to approach within thirty feet before they left their perch in a cypress and swept out over the "prairies." Their flight was like that of the Marsh Hawk and the similarity was accentuated by the white band at base of the tail. R. I. Brasher.

MARSH HAWK

Circus hudsonius (*Linnæus*)

A. O. U. Number 331 See Color Plates 43, 48

Other Names.— Harrier; Marsh Harrier; Blue Hawk (adult); Mouse Hawk; Frog Hawk; Bog-trotter; White-rumped Hawk.

General Description.— Length, 19 inches; spread of wings, 45 to 52 inches. Males have the fore and upper parts light ashy, and abdomen white; females are dark umber-brown above, and brownish-white below. Both sexes have the face encircled with an imperfect ruff, somewhat as in the Owls.

Color.— Adult Male: In perfect feather, head, neck, breast and upper parts, pale light ashy; rest of under parts, pure white with a few drop-shaped rusty spots; in most specimens there is a dusky wash on back, shoulders, and secondaries; five outer primaries, blackish; all primaries and secondaries with large white areas at base of inner webs; tail, bluish-ash banded with 5 or 6 obscure dusky bars, the terminal one darkest, and mottled with white at base of feathers; *upper tail-coverts, pure white.* Adult Female: Upper parts, dark umber-brown; feathers of head and neck edged laterally with yellowish-rufous; lores, line over and line below eye, dull yellowish-white with a dusky stripe between them running back from the rear angle of the eye; lesser wing-coverts, indented with pale rufous; tail, deep umber crossed by 6 or 7 regular but obscure bands of blackish, the lateral feathers being lighter; sides of head, dull rufous faintly streaked with dark brown; the facial disk, pale cream color also streaked with dark brown; chin and throat, plain dull yellowish-white; beneath, variable shades of dull white to brownish-yellow, thickly streaked with broad longitudinal stripes of dark umber-brown more numerous laterally;

Photograph by A. A. Allen

A MALE MARSH HAWK AT ITS NEST IN THE MARSHES

upper tail coverts, white. YOUNG: Similar to adult female but darker everywhere and with but four dark bands on tail.

Nest and Eggs.— NEST: On the ground in a tangle of weeds or grassy hummocks; neatly constructed, for a Hawk, of fine dried marsh grass; rather bulky, a foot or more in diameter. EGGS: 2 to 9, but usually from 4 to 6, dull white, faintly tinged with a greenish or bluish shade; no characteristic spots but often blotched with a very pale brown and other neutral-colored tints.

Distribution.— North America; breeds from northeastern Siberia, northwestern Alaska, northwestern Mackenzie, central Keewatin, northern Quebec, and Prince Edward Island south to the southern border of the United States; winters from southern British Columbia, Colorado, Iowa, the Ohio Valley, and New York (occasionally Massachusetts) south to the Bahamas, Cuba, and Colombia.

The Marsh Hawk is a bird of very wide distribution in the United States, being found in nearly all open localities. Slowly and steadily with a gliding flight the Harrier quarters back and forth across the fields with the care and precision of a well-trained pointer dog. Not a square yard is overlooked. Suddenly the forward flight is checked with almost a back somersault and as abruptly as though he had run into a wall; a short interval of hovering, then a descent that as often misses as captures the quarry below. When caught the prey is devoured on the spot.

The courting maneuvers of the male above the female are interesting. Sweeping in great semi-circles, gradually lessening in diameter, he stops suddenly on the top of a swoop, closes his wings, drops, turns head over tail, drops again, turns over and swings upward from the last somersault, just clear of the ground, on another ecstatic performance. These wild movements are usually executed in a silence unbroken except for the sound of rushing wings. Both parents take part in rearing the young and are very courageous in defending the home from intruders, especially after the eggs are hatched.

In the spring, Marsh Hawks are seen always in pairs; but after the young are able to fly they generally hunt in family parties, and later in the season twenty to fifty individuals will flock together.

Photograph by H. K. Job — Courtesy of Outing Publishing Co.

NEST AND YOUNG OF MARSH HAWK

The food of the Marsh Hawk varies with the season and with local conditions. In some parts of the country it is principally birds, and in others it is exclusively small quadrupeds, and of these field mice are the favorites. An average pair rearing young would destroy in the neighborhood of 1000 field mice during the nesting period. If we place a value of two cents on each mouse, which is a very conservative estimate, they would be worth twenty dollars for that short period, to a farmer, and more if he owned an orchard of any size. Rabbits, tree squirrels, ground squirrels, lizards, snakes, and frogs are found on the menu of this bird.

SHARP-SHINNED HAWK

Accipiter velox (*Wilson*)

A. O. U. Number 332 See Color Plate 44

Other Names.— Pigeon Hawk; Sparrow Hawk; Bird Hawk; Chicken Hawk; Bullet Hawk; Little Blue Darter.

General Description.— Length; male, 11 inches; female, 12 to 14 inches. Spread of wings, 23 to 27 inches. Color above, dark bluish-slate; below, white. *Tail, square* or slightly notched at tip; *five* outer primaries notched on inner webs.

Color.— ADULTS: Head, nape, back, shoulders, wings, rump, and upper tail-coverts, *dark bluish-slate;* primaries and tail, more brownish; the tail barred by four well-defined bands of brownish-black, the last subterminal and broader than the rest, the first concealed by the upper coverts; feathers of back of head, snowy white beneath the surface but showing when the feathers are erected; side of head, pale rufous; lores, cheeks, chin, throat and lower parts, pure white; chin, throat, and cheeks, marked with fine blackish shaft streaks; chest, abdomen, sides, flanks, and elongated leg feathers with numerous traverse broad bars of reddish rufous, these bars centrally heart-shaped and rather narrower than the white ones; on the sides the rufous predominates, the bars broadly arrowhead-shaped, connected along shafts; lower tail-coverts, pure white; bill, dark horn color; iris, cere, and feet, yellow; claws, black. YOUNG: Above, umber-brown; feathers of head, edged with dull light rufous; feathers of rest of upper parts bordered with the same color; the shoulders and rump showing roundish spots of white; tail as in adult but more brownish; below, dull white, tawny or yellowish, boldly striped lengthwise with dark umber or reddish-brown; feathers, generally black-shafted; sides of head and neck more narrowly streaked; broad, light stripe over eye.

Nest and Eggs.— NEST: Usually in a conifer, rarely on a ledge of rock; constructed of small sticks with or without a lining of leaves or bark; remarkably large for the size of the bird. EGGS: 4 or 5, dull bluish or greenish-white, boldly marked with large spots and blotches of different shades of brown, sometimes inclined to form a wreath around larger end, sometimes evenly distributed; occasionally reduced to small spots or so thickly placed as almost to obscure the ground tint.

Distribution.— North America; breeds nearly throughout the United States and Canada from northwestern Alaska, northwestern Mackenzie, southern Keewatin, central Quebec, and Newfoundland southward; winters from British Columbia, Colorado, Iowa, northern Ohio, and Massachusetts south to Panama.

Although the Sharp-shinned Hawk has a body but little larger than a Robin's, this relentless buccaneer, like his larger relative, the Cooper's Hawk, fully upholds the traditions of Hawks for

Photo by H. K. Job

A NESTFUL OF BABY SHARP-SHINNED HAWKS

destructiveness. Fortunately the persistent campaign of education, teaching the difference between "good" and "bad" birds of this family, is having its effect, and agriculturists are realizing that but few birds of prey are more harmful than beneficial. Opinion is gradually crystallizing into the conviction that but three Hawks deserve destruction — this species, the Cooper's Hawk and the Goshawk. There are individuals of other species who acquire a taste for poultry and it may become necessary to eliminate a particular individual, but the wholesale destruction of Hawks brings punishment on ignorance by an increase of quadruped and insect pests.

This murderous little villain will destroy all small birds unfortunate enough to live within its hunting grounds. At times it seems to "see red," attacking with blind fury birds much larger than itself. I saw one tackle a Screech Owl and have no doubt he would have killed it had there been no interference, handicapped as the Owl was by daylight. Quick as he is, the Flicker often escapes his onslaught by dodging around a limb, but is caught if attempting flight. A family of six young Flickers were killed, one after the other, because experience had not taught them to hug the branch; the Hawk's swift plunges frightened them into flight, and the little demon nailed them before they had gone ten feet!

R. I. BRASHER.

COOPER'S HAWK
Accipiter cooperi (Bonaparte)
IMMATURE FEMALE

All ⅓ nat. size

SHARP-SHINNED HAWK
Accipiter velox (Wilson)
ADULT MALE

The Sharp-shinned Hawk, a miniature of Cooper's Hawk, is fully as destructive to bird life as its larger cousin. Although rarely attacking full-grown poultry, it is very partial to chickens and often almost exterminates early broods which are allowed to run at large. No birds, from the size of Doves, Robins, and Flickers to the smallest Warblers and Titmice, are safe from its attacks. In examinations of the stomachs of this Hawk the remains of nearly fifty species of birds were recognized, and the list is of so much interest that it is given here:

Arizona Quail, Mourning Dove, Downy Woodpecker, Red-shafted Flicker, Yellow-shafted Flicker, Chimney Swift, Cowbird, Orchard Oriole, Grackle, Housefinch, Goldfinch, Savannah Sparrow, Western Savannah Sparrow, White-throated Sparrow, Field Sparrow, Chipping Sparrow, Tree Sparrow, Junco, Song Sparrow, Fox Sparrow, English Sparrow, Abert Towhee, Red-eyed Vireo, Black and Yellow Warbler, Black-throated Green Warbler, Yellow-rumped Warbler, Bay-breasted Warbler, Black-poll Warbler, Pine-creeping Warbler, Oven-bird, Maryland Yellow-throat, Blackcap, Western Blackcap, Canada Warbler, Mockingbird, Catbird, Crissal Thrasher, Cactus Wren, Carolina Wren, Red-breasted Nuthatch, Chicadee, Ruby-crowned Kinglet, Gray-cheeked Thrush, Hermit Thrush, Robin, and Bluebird.

To show how universally this species feeds on small birds, it is only necessary to say that of 107 stomachs containing food 103, or 96¼ per cent., contained the remains of birds. Mammals and insects seem to be taken rarely, mice and grasshoppers being the ones most frequently chosen.

A. K. Fisher, in *The Food of Hawks and Owls.*

COOPER'S HAWK

Accipiter cooperi (*Bonaparte*)

A. O. U. Number 333 See Color Plates 43, 44, 46

Other Names.— Pigeon Hawk; Chicken Hawk; Quail Hawk; Big Blue Darter; Swift Hawk; Striker.

Description.— Length: male, 18 inches; female, 20 inches. Spread of wings, 30 to 36 inches. Same proportions as Sharp-shinned Hawk, but larger and with *tail round; five* outer primaries notched on inner webs. Adults: Plumage exactly the same as Sharp-shinned Hawk's excepting top of head usually darker shade than

ADULT MALE COOPER'S HAWK
(⅛ nat. size)
The most destructive species of Hawk

Courtesy of Am. Mus. Nat. Hist.

color of upper parts, and in high plumage a clearer and more uniform bluish-slate. IMMATURE: Plumage also similar to the corresponding age of the Sharp-shinned.

Nest and Eggs.— NEST: Usually in tall trees from 10 to 50 feet from the ground in secluded woodlands; often an old Crow's or some other Hawk's nest is appropriated; being frequently occupied for a number of years in succession, and, additional material being added each spring, some of the nests become very large and bulky structures. EGGS: 3 to 6, pale bluish or greenish-white, sometimes plain but usually spotted with pale reddish-brown.

Distribution.— North America; breeds from southern British Columbia, southern Alberta, southern Keewatin, central Quebec, and Prince Edward Island south to southern border of the United States; winters from southern British Columbia, Colorado, Nebraska, Ohio, and Massachusetts south to Costa Rica, and occasionally farther north.

The resemblance between Cooper's Hawk and the Sharp-shinned is not confined to color, but extends to habits, the Cooper being, if anything,

Photo by H. K. Job Courtesy of Outing Pub. Co.

COOPER'S HAWKS

Too young to leave the nest, but old enough to be curious

because of its superior size, fiercer and more destructive. It will dash into the farmyard like a bolt, passing within a few feet of individuals and carrying off a young chicken with incredible swiftness. The attack is accomplished so suddenly that, unless the gun is in hand, the robber always escapes. There is no time to run even a few yards for a weapon — the thief is gone before it can be reached. If there is plenty of thick cover in the run, chickens will often escape, especially the more active breeds, like Leghorns. At my home in the Taconic Hills near Kent, Conn., I have repeatedly seen them strike, but as the foliage is dense and brushy they have invariably been unsuccessful in securing the quarry. In four years we have not lost a chicken by Hawks.

Cooper's Hawk is preëminently a "chicken Hawk," and is by far the most destructive species we have to contend with, not because it is individually worse than the Goshawk, but because it is so much more numerous that the aggregate damage done far exceeds that of all other birds of prey. Although not so large as the Goshawk, it is strong enough to carry away a good-sized chicken, Grouse, or cottontail rabbit. It is especially fond of domesticated Doves, and when it finds a cote easy of approach or near its nesting site, the inmates usually disappear at the rate of one or two a day until the owner takes a hand in the game. The arboreal and ground squirrels appear to be the mammals most frequently taken by Cooper's Hawk. Remains of chipmunks, red squirrels, and gray squirrels have been found in the stomachs. R. I. BRASHER.

GOSHAWK

Astur atricapillus atricapillus (*Wilson*)

A. O. U. Number 334 See Color Plate 45

Other Names.— American Goshawk; Blue Hen Hawk; Blue Darter; Partridge Hawk; Dove Hawk; Chicken Hawk.

General Description.— Length: male, 22 inches; female, 24 inches. Spread of wings, 43 to 47 inches. About the same proportions as the Sharp-shinned Hawk and Cooper's Hawk. Color above, bluish-slate; below, white.

Color.— ADULTS: Top and back of head, black, the white under surface of the feathers much exposed on

back of head; *a broad conspicuous white stripe over eye extending to back of head,* finely streaked with black; rest of upper parts, uniform bluish-slate; tail, darker and barred by five broad faintly defined bands of blackish and tipped with whitish; primaries, dusky slate; lores and cheeks, dull grayish-white; lower parts, white, everywhere except on throat and lower tail-coverts traversed with numerous narrow bars of slaty color, more broken on the breast, more regular on flanks and thighs; chin, throat, and cheeks with very fine black shaft lines; these shaft lines also evident on rest of under parts; bill, dark-bluish horn color; iris, red; cere, legs, and feet, yellow; claws, black. YOUNG: Above, dark brown, the feathers margined with rusty, this color changing on neck and shoulders to whitish or dull buffy; wings and tail, barred with dusky and light brown; under parts, yellowish-white thickly marked with lance or drop-shaped dark brown streaks; tail more strongly barred than adult's; a broader white tip; cere and feet, duller yellow; iris, yellow; bill, more brownish.

Nest and Eggs.— NEST: Usually in a conifer at a great height and in the most inaccessible depths of evergreen woods; constructed of sticks, twigs, weed stalks, and leaves, and lined with strips of bark, grass, and hemlock twigs. EGGS: 2 to 5, pale bluish-white, sometimes faintly spotted with pale buffy-brown but normally immaculate.

Distribution.— North America; breeds from northwestern Alaska, northwestern Mackenzie, central Keewatin, and northern Ungava south to Michigan and New Hampshire, and in the mountains south to Pennsylvania and New Mexico; winters from Alaska and the southern Canadian Provinces south to northern Mexico, Texas, Oklahoma, Missouri, Indiana, and Virginia; accidental in England.

Drawing by R. I. Brasher

GOSHAWK (⅛ nat. size)

Savage, fearless, and the merciless foe of poultry and game birds

It is fortunate for the American hen that the Goshawk resides mostly north of the United States, migrating southward only in winter when its toll from the poultry yard is necessarily limited because the birds are confined to their houses. It is the most destructive of the Hawks to game birds, the Ruffed Grouse suffering particularly from its depredations.

Though swift in attack its flight is even and its death is often accomplished with a rifle in the hands of a fair shot. Like most *Raptores,* hunger deprives it of caution. It will follow the hunter and snatch a wounded bird almost from beneath his feet, although this performance means its own destruction. Unless the adult is hungry, young Goshawks are more audacious than their elders and because of their brownish plumage their deeds are frequently attributed to the harmless Red-tail. The Goshawk is the most symmetrical and clean-cut of all its family not excepting even the Peregrine Falcon, and often (with me at least) is allowed to escape because of its splendid form and spirit. Its destructiveness cannot obliterate the appreciation its prowess arouses.

The Western Goshawk (*Astur atricapillus striatulus*) differs in having the markings of the under parts much more numerous; the upper parts are darker and incline to blackish on the back. This form inhabits the Arctic parts of the Pacific coast and breeds from Alaska south to the Sierra Nevadas of California. In winter it may be found in southern California and east to Colorado. R. I. Brasher.

HARRIS'S HAWK

Parabuteo unicinctus harrisi (*Audubon*)

A. O. U. Number 335

Description.— Length: male, 20 inches; female, 23 inches. Lores, nearly naked with numerous bristles; inner web of five outer quills notched. Adults: General plumage, blackish varying from dark umber-brown to a distinct dusky-black shade; the wings and tail, generally darker; *lesser and a part of the middle wing-coverts and feathers of the leg, a deep rich chestnut; upper and lower tail-coverts and base of tail, broadly white;* end of tail, also white for one inch or more; sides of head with a few white streaks; bill, horn color; cere and legs, yellow; iris, brown. Young: Plumage, more brownish, streaked on head and neck with yellowish-brown; back and shoulders varied with chestnut and rusty-brown; chestnut wing patch duller and much broken by darker feathers; white band at base of tail less sharply defined; terminal white band on tail narrower or missing; below, tawny-white broadly streaked with dark brown and dusky; thigh feathers *barred* with white.

Nest and Eggs.— Nest: In a tree or bush and varying greatly in size and finish; different species of cacti, Spanish bayonet or mesquites are most frequently selected as a site; a platform constructed of sticks, twigs, and weed stems and lined with grass, moss, and roots. Eggs: 2 to 4, dull white or greenish-white, plain, or lightly spotted with faint yellowish-brown or lavender.

Distribution.— Southeastern California, southern Arizona, southern New Mexico, abundant in some parts of southern Texas, rarely reaching east to Louisiana and Mississippi; south to Cape San Lucas and Panama; accidental in Iowa.

Harris's Hawk is tame and unsuspicious. Unless hunting it is rather slow in flight but it possesses plenty of dash and swiftness when pursuing prey. In the monotonous regions of mesquite and sagebrush thickets of the southwestern deserts, any form of life arouses interest, and the traveler follows with pleasure the free swings of Harris's Hawk coursing low over the brush, searching for the wood-rats or chipmunks which constitute its principal food. It is not averse to association with Caracaras and Vultures and often joins them in their meals of carrion.

Courtesy of the New York State Museum

GOSHAWK
Astur atricapillus atricapillus (Wilson)
IMMATURE ADULT
$\frac{1}{3}$ nat. size

RED-TAILED HAWK

Buteo borealis borealis (*Gmelin*)

A. O. U. Number 337 See Color Plates 43, 46, 47

Other Names.— Red Hawk; Hen Hawk; Chicken Hawk; Red-tail; Eastern Red-tail; Red-tailed Buzzard; Buzzard Hawk; White-breasted Chicken Hawk.

General Description.— Length: male, 22 inches; female, 24 inches. Spread of wings, 50 to 56 inches. Color above, dark brown; below, whitish. Four outer primaries notched on inner webs; long, broad wings; wide-spreading tail of medium length.

Color.— ADULTS: Plumage above, dark brown mixed or mottled with gray and whitish; under parts, white or whitish, usually washed with buff on sides of breast and with abdomen streaked with dark brown or blackish; *tail, bright rust-red* or rufous above, usually with a distinct black bar near the end, the tip, whitish; iris, brown; bill, dusky horn color; cere, legs, and feet, yellow. YOUNG: Dark streaks on abdomen so thick as to form a broad band of blackish; the tail, gray crossed by about eight narrow bars of blackish; iris and bill, yellow; feet, duller yellow; otherwise similar to adults.

Nest and Eggs.— NEST: A large and bulky structure generally placed well up in the forks of a large tree from 40 to 80 feet above ground; constructed of quite large sticks and lined with smaller twigs, bits of bark, and usually with the tips of hemlock branches, fern leaves, or moss; the same nest is occupied year after year and the annual addition of material adds to the bulk. EGGS: 2 to 4, dull whitish or bluish-white, and exhibiting a wide variation in form and markings; some plain, others heavily blotched with many shades of brown and red and still others with a few faint spots of pale lavender-gray which may form wreaths around either end or be fairly well distributed over entire surface.

Distribution.— Eastern North America, from Saskatchewan, Wisconsin, and Illinois east to central Keewatin and Newfoundland, and south to eastern Texas, northeastern Mexico, the Gulf coast, Florida, and the Greater Antilles.

The Red-tailed Hawk's shrill *kee-er-r-r* attracts our attention to its circling flight over the rocky hillsides of its favorite haunts. It is a slow-moving species. Frequently it is seen perched on a tree look-out where it watches for the small quadrupeds, especially mice, which form its principal food.

Although known throughout the country as

Photo by S. A. Lottridge

RED-TAILED HAWK

A useful species for keeping down the rodent population

"Hen Hawk," the Red-tailed very seldom raids the chicken-yard. Where mice, squirrels and their kind are plentiful, it never does so. A divergence from this fact by an individual who has acquired the poultry taste may warrant that particular bird's destruction, but personally I would rather let these Hawks have a chicken or two for their services in keeping down the mouse and rat population. In four years of chicken-farming this toll has not been required, although many pairs nest and live around my farm. One day an investigation of shrill squeals from a tall chestnut revealed three Red-tails quarreling over a young woodchuck, so fiercely that I walked directly beneath the fighting trio before they took alarm and fled, letting the object of the fracas drop to the ground.

Photograph by H. K. Job Courtesy of Outing Publishing Co.

HOME-LIFE OF RED-TAILED HAWK

Krider's Hawk (*Buteo borealis krideri*) is a light-colored race, nearly pure white below with but few markings on abdomen, the subterminal tail-bar very faint or wanting, the upper side of the tail light chestnut, and a mixture of much white in plumage of the upper parts. It is found on the Great Plains from Wyoming, North Dakota, and Minnesota south to Nebraska and Missouri, and in winter to Wisconsin, Illinois, Texas, Louisiana, and Mississippi.

The Western Red-tail (*Buteo borealis calurus*) is much darker than the stock form; normal specimens show heavier and darker bars and spots below; in extreme cases it is uniform deep brown with the tail rich red crossed by several black bars. This variation occurs in western North America from Alaska and Mackenzie southward to Cape San Lucas and Guatemala, east to western part of the Great Plains; it is found casually in Illinois and Ontario.

Harlan's Hawk (*Buteo borealis harlani*) is nearly uniform black; its tail is much mottled with grayish, rufous and white, and has a subterminal band of black. It is geographically distributed over the lower Mississippi valley and the Gulf States from Louisiana to Georgia and Florida; sometimes it occurs in Colorado, Texas, Kansas, Nebraska, Iowa, Illinois, and Pennsylvania.

The Alaska Red-tail (*Buteo borealis alascensis*) is a larger dark-colored subspecies, inhabiting southeastern Alaska from Yakutat Bay to the Sitka Islands. R. I. Brasher.

From its abundance, wide distribution, and striking appearance the Red-tailed Hawk is probably the best known of all the larger Hawks. Since it is handicapped by the misleading name "Hen Hawk," its habits should be carefully examined. There is no denying that both it and the Red-shouldered Hawk, also known as "Hen Hawk," do occasionally eat poultry, but the quantity is so small in comparison with the vast numbers of destructive rodents consumed, that it is hardly worth mentioning. While fully 66 per cent. of the Red-tail's food consists of injurious mammals, not more than 7 per cent. consists of poultry, and it is probable that a large

Courtesy of the New York State Museum

RED-TAILED HAWK *Buteo borealis borealis* (Gmelin)
ADULT
COOPER'S HAWK *Accipiter cooperi* (Bonaparte)
ADULT FEMALE
$\frac{1}{4}$ nat. size

proportion of the poultry and game captured by it and the other buzzard Hawks is made up of old, diseased, or otherwise disabled fowls. It is well known to poulterers and owners of game preserves that killing off the diseased and enfeebled birds, and so preventing their interbreeding with the sound stock, keeps the yard and coveys in good condition and hinders the spread of fatal epidemics. It seems, therefore, that the birds of prey which catch aged, frost-bitten, and diseased poultry, together with wounded and crippled game, are serving both farmer and sportsman.

Abundant proof is at hand to show that the Red-tail greatly prefers the smaller mammals, reptiles, and batrachians, taking little else when these can be obtained in sufficient numbers. If hard pressed by hunger, however, it will eat any form of life, and will not reject even offal and carrion; dead Crows from about the roosts, poultry which has been thrown on the compost heap, and flesh from the carcasses of goats, sheep and the larger domesticated animals are eaten at such times. Immature Hawks are more apt to commit depredations than adults, the reason probably being that they lack skill to procure sufficient quantity of their staple food. A large proportion of the birds eaten consists of ground-dwelling species which probably are snatched up while half concealed in the grass or vegetation. Among the mammals most often eaten and most injurious to mankind are the arboreal and ground squirrels, rabbits, voles and other mice. The stomachs of the Red-tailed Hawks examined contained the Abert squirrel, red squirrel, three species of gray squirrels, two species of chipmunks, Say's ground squirrel, plateau ground squirrel, Franklin ground squirrel, striped ground squirrel, harvest mouse, common rat, house mouse, white-footed mouse, Sonoran white-footed mouse, wood rat, meadow mouse, pine mouse, Cooper lemming mouse, cotton rat, jumping mouse, porcupine, jack rabbit, three races of cottontails, pouched gopher, kangaroo rat, skunk, mole, and four kinds of shrews. The larger insects also, such as grasshoppers, crickets, and beetles, are sometimes extensively used as food.

A. K. Fisher, in *The Food of Hawks and Owls.*

Photograph by G. N. Leek

YOUNG RED-TAILED HAWK

RED-SHOULDERED HAWK

Buteo lineatus lineatus (*Gmelin*)

A. O. U. Number 339 See Color Plate 47

Other Names.— Red-shouldered Buzzard; Big Chicken Hawk; Hen Hawk; Winter Hawk.

General Description.— Length: male, 20 inches; female, 22 inches. Spread of wings, 44 to 50 inches. Color above, reddish-brown; below, lighter reddish-brown, barred and streaked. Four outer primaries notched on inner webs; outer webs spotted with white or buff.

Color.— Head, neck, and back, deep rufous, each feather with a blackish center stripe; chin, throat, and cheeks, dull white with a dusky indistinct mustache; *under parts, light rufous,* abdomen, sides, and middle of breast with transverse bars of buff; thigh feathers, pale ochraceous; lower tail-coverts, plain whitish; *lesser wing-coverts, rufous or chestnut* with black shaft streaks; shoulders and middle wing-coverts broadly edged with rufous; secondaries, dark brown tipped and crossed with two bands of whitish; primaries, dusky-black fading at tips into grayish-brown with square spots of white on outer webs; rump, uniform brownish-black; upper tail-coverts banded with the same color; tail, brownish-black barred with six sharply defined narrow bands of white, the last at the tip and the first two concealed by upper coverts; bill, bluish horn color; cere and legs, yellow; *iris, brown.* YOUNG: Above, plain dark brown without orange-brown or rusty markings; *lesser wing-coverts, rusty* but not so pronounced as in the adult plumage; head, neck, and under parts, white or yellowish-white, rather heavily streaked with drop- or arrow-shaped marks of dark brown; tail, brown crossed by a number of lighter and darker bars; *iris, yellow.*

Photo by H. K. Job Courtesy of Outing Pub. Co.

NEST OF RED-SHOULDERED HAWK

There was also in this nest the egg of an Owl

Nest and Eggs.— NEST: Usually placed in the fork of a lofty elm, birch, maple, or beech (seldom in a conifer); a large bulky structure made almost entirely of sticks. EGGS: 3 to 5, dull white or bluish-white, erratically spotted and blotched with umber and yellowish-brown.

Distribution.— Eastern North America; breeds from Manitoba, southern Keewatin, southern Quebec, Nova Scotia, Prince Edward Island, south nearly to the Gulf States, west to edge of the Great Plains; winters south to the Gulf coast.

Courtesy of Am. Mus. Nat. Hist.

RED-SHOULDERED HAWK (⅛ nat. size)

A species which is very valuable to the farmer

Although quite as common in many localities as the Red-tail, the Red-shouldered Hawk is less often seen, since it keeps more within the shade of woods and especially so in swampy tree-covered areas. It is a lighter-built bird than the Red-tail and more impetuous in pursuit of its prey. Its call — a shrill *kee-yoo* — is sharper and with less "burr" on the last note. Any one familiar with both species can identify them in life almost as far as they can be seen. The young require more careful inspection, but the slenderer and less-feathered legs with more heavily streaked breast serve to identify them. Usually the Red-shouldered Buzzards are found in pairs; they evidently mate for the entire year and

Courtesy of the New York State Museum

RED-SHOULDERED HAWK
Butco lineatus lineatus (Gmelin)

IMMATURE ADULT

RED-TAILED HAWK
Buteo borealis borealis (Gmelin)

IMMATURE

All ⅓ nat. size

possibly for life. The young and parents often remain together throughout the autumn.

The Florida Red-shouldered Hawk (*Buteo lineatus alleni*) differs from the common Red-shouldered Hawk only in size, being much smaller; its range is restricted to the south Atlantic and Gulf States, from South Carolina through Texas into Mexico.

The entire under parts of the Red-bellied Hawk (*Buteo lineatus elegans*) are sometimes rich dark reddish, almost effacing the usual markings, but typical specimens have a ruddy-colored breast, this color fading into lighter on the abdomen; the wings and tail are barred with white as in the Red-shouldered. This form occurs from the Rocky Mountains to the Pacific and from British Columbia south to Lower California and Mexico.

The Red-shouldered Hawks are very valuable to the farmer. They are more nearly omnivorous than most of our birds of prey, and are known to feed on mice, birds, snakes, frogs, fish, grasshoppers, centipedes, spiders, crawfish, earthworms, and snails. About 90 per cent. of their food consists of injurious mammals and insects, and hardly 1½ per cent. of poultry and game. It is folly to destroy this valuable bird, and everywhere it should be fostered and protected.

ZONE-TAILED HAWK

Buteo abbreviatus *Cabanis*

A. O. U. Number 340

Description.— Length: male, 19 inches; female, 21 inches. Spread of wings, 47 to 53 inches.

Color.— Adults: Entire body, a uniform glossy coal-black; viewed from above the *tail is black, narrowly tipped with white and crossed with three bands* of slate color increasing in width and distinctness from front to rear, and narrowly tipped with white; viewed from below, three pure white zones appear, since the ashy is on outer webs only, with white on inner web; wings when folded quite black, but inner webs basally marked with light and dark bars and spotted with white; feet, yellowish; bill, dark blackish-horn. Young: Similar to adults but the snowy white bases of the feathers, especially on head and neck, more inclined to show through; tail banded with more numerous and less regular bars with the inner webs of the feathers mostly white.

Nest and Eggs.— Nest: From 15 to 50 feet from ground on the horizontal branches of tall cottonwoods, ash, sycamores, box elders, or cypress trees, along borders of streams; constructed of coarse sticks and twigs and lined with leaves or Spanish moss. Eggs: 2 to 4, dull white, spotted or blotched with warm chestnut or umber-brown, chiefly at large end.

Distribution.— Southern Arizona, southern New Mexico, and southwestern Texas, south through Mexico and Central America to Venezuela and British Guiana; casual in southern California.

Little is known of the life history of the Zone-tailed Hawk. Its favorite haunts are banks of streams, and it builds its nest and lives among the cottonwoods. In Texas and New Mexico, these wanderers from Mexico are said to frequent cañons and to dive down the perpendicular sides, like Clarke's Nutcracker, almost to the stream at the bottom. It is a lightly-built bird. Its food consists of small mammals, lizards, frogs, and beetles, grasshoppers, and other insects.

SWAINSON'S HAWK

Buteo swainsoni *Bonaparte*

A. O. U. Number 342

Other Names.— Brown Hawk; Black Hawk; Hen Hawk.

Description.— Length: male, 20 inches; female, 22 inches. Spread of wings, 50 to 56 inches. Three outer primaries notched on inner webs.

Color.— Every possible gradation of coloration between the normal and melanistic phases is exhibited by different individuals. Adult Male in Normal Plumage: Above, grayish-brown; tail tinged with hoary and with about 9 or 10 dusky bands; *forehead, chin, and throat, white; chest, broadly bright chestnut* with black shaft lines; rest of under parts, whitish usually barred and spotted with brown; iris, brown; feet and cere, yellow; bill and claws, bluish-black. Adult Female in Normal Plumage: Chest, grayish-brown; otherwise like male. Darker or Melanistic Phase (both sexes): Entire plumage sooty-brown. Young: Entire upper parts, dark brown, each feather tawny-edged; head, neck, and under parts, buff or buffy white; wings and tail, barred with darker brown.

Nest and Eggs.— Nest: Placed almost anywhere — on the ground, in bushes, or on ledges — but generally it is placed in the tallest trees toward the end of horizontal branches; constructed of small branches and twigs, and lined with a few leaves, moss, or feathers; sometimes old nests are rehabilitated. Eggs: 2 to 4, normally 2, white, greenish-white, or buffy-white, usually spotted or blotched with reddish-brown; sometimes unmarked.

Distribution.— North and South America; breeds from southern British Columbia, Fort Yukon, Alaska, northwestern Mackenzie, and Manitoba south to Chile; casual in Quebec, Ontario, Maine, and Massachusetts; winters from South Dakota southward.

Swainson's Hawk is a western bird which occurs eastward occasionally, specimens having been taken in many of the eastern States. In many cases where it has been reported, however, this identification was probably incorrect.

Photo by S. A. Lottridge

IMMATURE SWAINSON'S HAWK

On the sage plains of Washington, Oregon, and adjoining States the characteristic Hawk is Swainson's. There it is very abundant. It prefers the open prairies, coursing over these uninhabited wastes with slow circling flight until its quarry is sighted when it is transformed into the quick alert hunter intent on securing the prize.

"Compared with the majority of our Hawks it is gentle and unsuspicious in disposition, living in perfect harmony with its smaller neighbors. It is no unusual sight to find other birds nesting in the same tree; and the Arkansas Kingbird goes even farther than this, sometimes constructing its home under the nest of these Hawks or in the sides of it. The food of Swainson's Hawk consists almost entirely of the smaller rodents, principally striped gophers and mice, as well as grasshoppers and the large black cricket which is very common as well as destructive in certain seasons, and the bane of the farmers in eastern Oregon, and other localities in the Great Basin, destroying and eating up every green thing as they move along. I cannot recall a single instance where one of these birds visited a poultry yard. From an economic point of view I consider it by far the most useful and beneficial of all our Hawks." (Bendire.)

The adult in normal plumage is likely to be mistaken for the immature Red-tail or possibly for the Red-shouldered Hawk, but it lacks the rufous wing-coverts, and has a broad pectoral band of gray, brown, or cinnamon, separating the white throat from the nearly white under parts. The fact that this hawk has only three primaries notched on the inner webs will separate it from either the Red-tailed or the Red-shouldered Hawk.

BROAD-WINGED HAWK

Buteo platypterus (*Vieillot*)

A. O. U. Number 343 See Color Plate 48

Other Name.— Broad-winged Buzzard.

General Description.— Length: male, 14 inches; female, 18 inches. Spread of wings, 33 to 38 inches. Color above, dark brown; below, white, barred and streaked. *Three* outer primaries notched on inner webs; wing never more than 13½ inches long.

Color.— Crown, back of head, and nape, blackish-brown broken by dull rufous behind; back, shoulders, and upper parts, dark grayish-brown, the feathers with black shaft line and plain dark brown centers; primaries and secondaries, deep dusky on outer webs and at ends and barred with darker; tail, similar to color of back, crossed with three narrow grayish-white bars; line back of eye and sides of head, grayish-white finely

streaked with dusky and brown; lores, whitish; a diffused but strongly marked mustache from gape to breast but throat white; breast, pale yellowish-brown shading into whitish under coverts, thickly traversed on breast with broad arrowhead bars of reddish-brown, these bars wider on sides and flanks, narrower on thigh feathers, and each with a central dark shaft line; greater coverts edged with rufous or raw umber; bill, dark horn color; cere and feet, yellow; claws, black; iris, deep brown. YOUNG: Above, blackish-brown variegated with raw umber, chestnut, or dull whitish edgings to all feathers; streaks above and behind eye and sides of head, pale yellowish-brown streaked with brownish; throat, white as in adult; under parts, yellowish-white with a tinge of tawny, boldly marked on sides and flanks with longitudinal drop- and arrowhead-shaped dark brown spots, center line of breast and abdomen with a few narrow streaks or plain; tail, dark brown crossed with 6 or 8 lighter bars on both webs of middle feathers, on outer webs of the others; all tail-feathers tipped with white.

Nest and Eggs.— NEST: Usually placed in the crotches of trees from 10 to 80 feet above ground; roughly and coarsely constructed of sticks and bits of bark and lined with small roots, bark strips, moss, or feathers and sometimes decorated with green sprigs. EGGS: 2 to 5, usually 2 or 3, very pale greenish or grayish-white heavily marked with brown spots.

Distribution.— Eastern North America; breeds from central Alberta, southeastern Saskatchewan, northern Ontario, New Brunswick, and Cape Breton Island south to the Gulf coast and central Texas, mainly east of the Mississippi; winters from the Ohio and Delaware valleys south to Venezuela and Peru.

The Broad-winged Hawk is a common though locally distributed Hawk, partial to deep woods. It will remain motionless for hours, apparently asleep but in reality wide awake, for the least movement in the brush below of a prospective victim will send him from his perch like an arrow. He is more silent and more fond of solitude than other Hawks. His call note is much weaker, closely resembling that of the Wood Pewee, but louder, higher pitched, and with the last note short and less plaintive than the notes of the Flycatcher, and having a certain ventriloquistical quality which makes it difficult to judge the distance of the author.

As far as my experience goes, it seems to be a beneficial and harmless species, confining its food to small animals, frogs, mice, etc., and seldom molesting the farmer's chickens. Agriculturists with whom I have talked do not always share this view but then it is difficult to eradicate an idea so firmly intrenched as the belief that all Hawks are demons.

Of the economic status of this species, Dr. A. K. Fisher, says: "The Broad-winged Hawk feeds largely on insects, small mammals, snakes, toads, and frogs, and occasionally on small birds. It is especially fond of the larvæ or caterpillars of the large moths which feed upon the leaves of fruit and shade trees. These insects are too large and formidable for the smaller insectivorous birds to attack; hence their principal enemies are Hawks, of which the one under consideration is the most important. It feeds extensively also upon grasshoppers, crickets, cicadæ, May beetles and other coleoptera. Like the other Buzzard Hawks, it is fond of meadow mice, and eats also considerable numbers of chipmunks, shrews, red squirrels, and occasionally rabbits and moles. Probably the greatest damage

Drawing by R. I. Brasher

BROAD-WINGED HAWK (¼ nat. size)

A beneficial and harmless species

done by this Hawk is the destruction of toads and snakes, which are mainly insectivorous and hence beneficial to the farmer."

R. I. BRASHER.

Photo by H. K. Job Courtesy of Outing Pub. Co.

BROAD-WINGED HAWK

Approaching its nest with a piece of bark in its mouth

SENNETT'S WHITE-TAILED HAWK

Buteo albicaudatus sennetti *Allen*

A. O. U. Number 341

Other Name.— White-tail.

General Description.— Length: male, 22 inches; female, 24 inches. Spread of wings, 50 to 56 inches. Color above, ash; below, white, barred on sides. *Three* outer primaries notched on inner webs.

Color.— Adult Male: Upper parts, including crown, sides of head, and neck, clear ash, tinged on shoulders with reddish; *lesser wing-coverts, pure reddish-brown not extending to edge of wing; rump, upper coverts, and tail, pure white, with a broad black band near* the tip and numerous fine irregular blackish cross lines; entire *under parts, pure white* lightly crossed with fine dark bars on sides and usually on thigh feathers; the greater coverts and secondaries like back but slightly darker gradually deepening to dusky-black on primaries, the inner webs of which are more brownish and crossed with numerous darker bars, speckled basally with white increasing in firmness and extent on secondaries; bill, blackish-horn; feet and gape, yellow; claws, black; cere, dull greenish. Adult Female: Similar to adult male but colors generally darker and reddish-brown of wing-coverts more extensive. Young: Crown, sides of head and neck, throat, lower breast and upper abdomen, back, and wings, clear sepia-brown; region over eye and rear part of sides of head with a few very narrow white streaks; lores, a rather broad streak below eye, and edge of wing, white; throat streaked with whitish; lower abdomen, thighs, under tail-coverts, white with heart-shaped spots of sepia; tail, *grayish-ash* shading to darker brown at end where tipped with white, crossed or not with very faint darker bars; wing-coverts outlined with paler brown; bill, horn color; legs, yellow; claws black; cere, livid.

Nest and Eggs.— Nest: Placed in low trees or bushes within 10 feet of ground; a large rough bulky structure of sticks and grasses usually destitute of lining. Eggs: 2 or 3, dull white, faintly and lightly spotted with yellowish-brown.

Distribution.— From central Texas south to southern Mexico.

Sennett's White-tailed Hawk is an exceedingly handsome bird and a straggler over our border from Mexico. Its banded white tail and conspicuous chestnut wing patch give it a distinction shared by no other Hawk. Though its habits are not very well understood they are probably similar to those of others of the genus.

R. I. Brasher.

Courtesy of the New York State Museum

ROUGH-LEGGED HAWK
Archibuteo lagopus sancti-johannis (Gmelin)
Black phase

BROAD-WINGED HAWK *Buteo platypterus* (Vieillot)
ADULT

IMMATURE
MARSH HAWK *Circus hudsonius* (Linnaeus)
MALE

All ½ nat. size

ROUGH-LEGGED HAWK

Archibuteo lagopus sancti-johannis (*Gmelin*)

A. O. U. Number 347a See Color Plates 43, 48

Other Names.— American Rough-legged Hawk; Rough-leg; Rough-legged Buzzard; Black Hawk; Mouse Hawk.

General Description.— Length: male, 20 inches; female, 22 inches. About the size of the Red-tailed Hawk, but much lighter built and with more slender feet and longer, more pointed wings; *four* outer primaries deeply notched on inner webs; *feathers of legs extending to the toes.*

Color.— Intermediate stages between normal and melanistic plumages are common. ADULTS (NORMAL COLORATION): Upper parts, grayish-brown, margined with whitish and buffy; wings and tail barred with gray and whitish; inner webs of primaries and under surfaces of wing-feathers, white toward their bases; tips of wings and patch on middle under wing-coverts, black; under parts, white or buffy, spotted and streaked with blackish, forming a dark band across the abdomen. YOUNG: End portion of tail, plain grayish-brown except for white tip; under parts more heavily marked with black, the band across abdomen, broad and unbroken; otherwise similar to adults. DARK OR MELANISTIC PHASE (COMMON TO ALL AGES AND TO BOTH SEXES): Uniform sooty-black, except base of tail and a portion of the bases of the wing-feathers which are white.

Nest and Eggs.— NEST: Usually placed in large trees but sometimes on ledges; a large bulky structure of interlaced sticks, grasses, and weeds and lined with small twigs, finer grasses, and other fibrous vegetable material, well felted together. EGGS: 2 to 5, usually 2 or 3 varying from dingy to buffy-white and sprinkled with blotches of dark brown.

Distribution.— North America north of Mexico; breeds from the Aleutian Islands, northwestern Alaska, Arctic coast, and northern Ungava, south to central British Columbia, southern Mackenzie, southern Ungava, and Newfoundland; winters from Oregon, Colorado, Minnesota, and the northern boundary of eastern United States, south to central California, southern New Mexico, Texas, Louisiana, and North Carolina.

The Rough-legged Hawk breeds in Alaska and Canada and is but a winter migrant to the States. Its favorite haunts are in open meadows or in country covered with scrub and brush. It is the nearest to nocturnal of all our Hawks. Its plumage is soft and fluffy, its flight noiseless, and, when observed in the twilight sweeping quietly over the open spaces where field mice abound, it is easily mistaken for an Owl. When mice are abundant one or two Rough-legs will hunt for weeks in the vicinity, effectually controlling these pests and saving many fruit trees, especially the young ones, from destruction. While watching for rabbits on moonlit nights I have more than once been startled by the sudden appearance of a dark form swooping noiselessly down on a luckless mouse playing on the snow crust. A swift dash — a tiny squeak — then the quick disappearance of captor and victim into the shadows.

The Ferruginous Rough-leg (*Archibuteo ferrugineus*) is quite similar in its habits to the common Rough-leg. The adults have the top, back, and sides of head streaked equally with blackish and white; rest of the upper parts, blackish and chestnut in about equal amounts; the tail silvery ash tinged with rufous and with white tip and base; the under parts, pure white from bill to end of tail; and legs, chestnut barred with black. It breeds from southern Washington, southwestern Saskatchewan, and southern Manitoba to southern California, Utah, Colorado, and Kansas, and winters from Montana to Lower California and northern Mexico. The Ferruginous Rough-leg is rarely found east of the Mississippi.

Of the value to man of these two species, Dr. A. K. Fisher says: "The Rough-legged Hawk and the Ferruginous Rough-leg, or Squirrel Hawk, as it is sometimes called on account of its fondness for ground squirrels, so destructive in the West, are among our largest and most beneficial Hawks. The winter range of the Rough-leg is determined more by the fall of snow than by the intensity of cold, the main body advancing and retreating as the barrier of snow melts or accumulates.

"Meadow mice and lemmings form the staple food of this bird. In this country lemmings do not reach our territory except in Alaska, but in the north of Europe they occasionally form into vast, migrating devastating hordes which carry destruction to crops in the country invaded. The vole, or meadow mouse, is common in many parts of this country, and east of the Mississippi River without doubt is the most destructive mammal to agriculture. It destroys meadows by tunneling under them and eating the roots of grass. This mouse also destroys grain and various kinds of vegetables, especially tubers, but prob-

ably does even more damage by girdling young fruit trees. In 1892 considerable areas in southeastern Scotland were overrun by meadow mice and a large amount of property was destroyed during the 'vole plague.' Just such invasions are to be expected in any country where predacious mammals and birds are reduced to a minimum in the supposed interest of game preservation. This wholly upsets nature's balance, and the injurious rodents are left practically without an enemy to control their increase. Attempts have been made in some of our States to reduce the number of Hawks and Owls by offering bounties for their heads, but fortunately the work has not been carried far enough to do the harm that has resulted from the long-continued efforts of gamekeepers in Great Britain.

"The Ferruginous Rough-leg is as fully beneficial as its relative, though the character of its food differs somewhat. In many parts of the country inhabited by it, meadow mice, which play such an important part in the economy of the other bird, are scarce or wanting, but are replaced by nearly as destructive rodents, the ground squirrels. Upon these this large and handsome Hawk wages continuous warfare, and great is the service it performs in keeping their numbers in check. Rabbits, prairie dogs, and occasionally pouched gophers are eaten. It is humiliating to think how many of these two noble Hawks are ruthlessly murdered, and to reflect that legislators put bounties on their heads to satisfy the ignorant prejudices of their constituents." R. I. Brasher.

BALD EAGLE

Haliæetus leucocephalus leucocephalus (*Linnæus*)

A. O. U. Number 352 See Color Plates 43, 49

Other Names.— White-headed Eagle; White-headed Sea Eagle; American Eagle; Black Eagle; Gray Eagle; Washington Eagle. The last three names refer to the immature Bald Eagle.

General Description.—Length: male, 30 to 35 inches; female, 34 to 43 inches. Spread of wings, 6½ to 7¾ feet. Plumage, dark brown. *Tarsus, bare for an inch or more above base of toes;* five outer primaries deeply notched on inner webs.

Color.— Adults: Entire head, neck, upper tail-coverts, and tail, white; rest of plumage, dark brown, many of body feathers with paler margins, and the wing-feathers nearly black; bill, cere, and feet, bright yellow; iris, pale yellow or yellowish-white. Immature, first year: Plumage, mainly black; no white on head, only small freckles of white on inner webs of tail-feathers, but all body feathers, snowy white below the surface; bill, black; feet, yellow; iris, brown. Immature, Second and Third Years: Head and neck, mainly black, the long narrow feathers at the back of the neck, tipped with brown or gray; tail, black, the inner webs of most of the feathers, sprinkled or mottled with whitish; body feathers, above and below, mixed brown, black, and gray, sometimes streaked and margined with pure white; bill, dark horn color; cere and feet, yellow; iris, brown.

Nest and Eggs.— Nest: In large trees from 20 to 90 feet above ground, sometimes in niches of rocky cliffs; a large coarsely built affair of good-sized sticks, roots, twigs, seaweed, bits of turf, vine or plant stalks and lined with roots or grass. Eggs: 2, rarely 3, ivory white with a granular surface.

Distribution.— United States to southern Lower California and northern Mexico, breeding in suitable location throughout its range; rare and local in California and in arid interior.

In flight or at rest the Bald Eagle is majestic, its white head and tail lending dignity to its imposing form. The Eagle as a type has inspired many literary tributes. Tennyson's two stanzas refer presumably to the Gray Sea Eagle of Europe, which sometimes visits the western hemisphere, but they might well have been addressed to our Bald Eagle:

> He clasps the crags with crooked hands;
> Close to the sun in lonely lands,
> Ring'd with the azure world, he stands.
>
> The wrinkled sea beneath him crawls;
> He watches from his mountain walls,
> And like a thunder-bolt he falls.

In prose perhaps nothing finer has been written than Mr. Burroughs's expression:

"He draws great lines across the sky; he sees the forests like a carpet beneath him; he sees the hills and valleys as folds and wrinkles in a many colored tapestry; he sees the river as a silver belt connecting remote horizons. We climb mountain-peaks to get a glimpse of the spectacle that is hourly spread out beneath him. Dignity, elevation, repose, are his. I would have my thoughts take as wide a sweep. I would be as far removed from the petty cares and turmoils of this noisy and blustering world." (*Far and Near.*)

GOLDEN EAGLE *Aquila chrysaëtos* (Linnaeus)
½ nat. size

BALD EAGLE *Haliaeetus leucocephalus leucocephalus* (Linnaeus)
IMMATURE
½ nat. size

The Bald Eagle frequents the shores of lakes and rivers. His food consists very largely of fish and he very seldom or never nests at any great distance from where this food can be obtained in abundance. He is almost non-migratory, only deserting his home during the coldest weather when the waters are frozen over. Frequently he is seen soaring high in the air in search of something to eat. His power of sight is famous and often he will spy the object of his quest when at a distance of two or three miles and make a direct line for it. Most of his food is dead fish gathered from the surface of the water or from the shores of lakes and rivers but when he cannot find the dead fish he often robs the Osprey compelling it to drop the fish it has just captured. Sometimes the Eagle fishes for himself but he is not an expert fisherman. Occasionally he joins the Crows and Ravens when they are feeding upon carrion. In the winter time he often attacks waterfowl, but is rarely successful if the fowl be upon water, for just as the Eagle drops for his prey the latter dives beneath the surface of the water and escapes. He kills many rabbits, squirrels, mice, and snakes, but on the whole he confers no decided benefits on the agriculturist. On rare occasions an Eagle has been known to pick up a hen or to destroy a young lamb but these are not common offenses.

The male Bald Eagle has a high clear call which is represented by the syllables *cac-cac-cac*. The female's cry is more harsh and broken and Dr. Fisher compares it to the loud laugh of a maniac. They have a screaming note which much resembles the voice of a sea gull and has been likened to that of a small fox or of a dog.

The nest, a bulky and conspicuous affair, is placed high up in a large tree generally so situated that a wide view of the surrounding country can be obtained. Year after year the same pair of Eagles occupy the nest, making slight repairs to it each spring. Bald Eagles mate for life and apparently they are very fond of each other. Family cares are undertaken very early in the season; in Florida, eggs are laid in December or January; in the Middle States, in February or March; and in districts further north, a little later.

About thirty days are needed for incubation and only one brood is reared a season. When the baby Eagles are hatched they are covered with a whitish down but they acquire their first plumage before they are able to fly. Three years must pass before maturity is reached. During these years the young Eagles are noticeably different in color from the adults and during the first year after leaving the nest they are larger than either of the parents, the expanse of the wing being often a foot more. These large immature birds deceived Audubon who thought they were a distinct species and named them "Birds of Washington."

Courtesy of Nat. Asso. Aud. Soc.

BALD EAGLE'S NEST

Florida

In northwestern Alaska, northwestern Mackenzie, central Keewatin, and northern Ungava south to British Columbia and the Great Lakes occurs a larger but otherwise similar Eagle known as the Northern Bald Eagle (*Haliæetus leucocephalus alascanus*).

GOLDEN EAGLE

Aquila chrysaëtos (*Linnæus*)

A. O. U. Number 349 See Color Plate 49

Other Names.— Ring-tailed Eagle; Black Eagle; Mountain Eagle; Gray Eagle; Brown Eagle.

General Description.— Length, about 3 feet; spread of wings, 7 to 7½ feet. Plumage, dark brown. *Legs feathered to the toes.*

Color.— ADULTS: Dark brown with a faint purplish gloss becoming lighter on wing-coverts, tail- and thigh-feathers; feathers of back of head, nape, and sides of neck with separate, spear-head-shaped tips, of *a deep golden brown;* primaries, secondaries, and tail, more blackish; tail, white or grayish at base; bill, bluish horn; legs, cere, gape, and line over eye, yellow; claws, black; iris, brown. YOUNG: Darker and larger than adults; tail, white at very base and with a broad black terminal bar; golden-brown of back of head, etc., less apparent and duller; otherwise as in adults.

Nest and Eggs.— NEST: Usually on inaccessible cliffs, sometimes in large trees — sycamores, pines, or oaks; constructed of good-sized sticks and lined with hay, twigs, or green grass. The birds return every year to the same site, adding material each season until the nest sometimes becomes 4 or 5 feet in diameter and nearly the same height. EGGS: 2, white, beautifully marked with bold spots, specks, and blotches of chestnut, sienna, and shades of purple, more heavily at large end.

Distribution.— Northern part of northern hemisphere; in the Old World south to north Africa and the Himalaya; in North America from northern Alaska, northwestern Mackenzie, central Keewatin, and northern Ungava south to middle Lower California, central Mexico, western Texas, South Dakota, Manitoba, southern Keewatin, central Ontario, New Hampshire, Maine and Nova Scotia and in the Alleghenies to southwestern North Carolina; less common east of the Mississippi.

The aerie was in the top of a storm-battered old pine on the east slope of the Cascades. It looked impossible to climb, yet the going up was not so hard. Excitement led me on. As I climbed, the task became more precarious. My heart beat wilder each time the pair of Bald Eagles circled near. I finally straddled the big limb below the nest and worked a hazardous way through five feet of dead limbs and debris.

I had read so many stories of fierce Eagles that I half persuaded myself I should be attacked, but I wasn't. After a careful study extending over several years, I have found that forty-eight such cases out of every fifty may be set down as false in the beginning. Investigation will show the forty-ninth is without truth, and there might possibly be a slight cause for the fiftieth. I have the records of over a hundred nests of the Bald and Golden Eagles that have been robbed and in not a single case did the birds put up a fight.

The pair of Eagles were winding slowly around the blue dome of the sky. I moved the youngsters over and climbed in beside them to visit. Here were the nestlings of noble birth. Of the millions of people who daily see our national emblem on the coins and arms of our country, few know anything of the Eagle as a bird. Few know of the home-life and habits. Fewer still have ever seen an Eagle wild and free.

In North America, we have two Eagles that are of general distribution: the Bald Eagle, found in the wilder places throughout the United States, and the Golden Eagle, now restricted almost entirely to the mountainous regions of the West. The term "bald" originated from the white head which is an unmistakable mark of identity of the full-grown bird and at a distance gives the impression of baldness.

The Bald Eagle is much the same general color as the Golden Eagle up to the time it is three years old. In the time of Audubon, these young Bald Eagles were considered a separate species. At the age of three years, the Bald Eagle attains maturity and the white feathers appear on the head and neck. To distinguish one species from the other, look at the lower joint of the leg. If this is covered with feathers down to the toes, it is a Golden Eagle; if the leg is naked, it is a Bald Eagle.

In some ways, the Golden Eagle is a nobler bird than his white-headed cousin. The Bald Eagle is a resident along the big rivers, on the shores of lakes and on the islands of the sea. Its favorite food is fish. It often catches these, or compels an Osprey to pay tribute. In some places, it lives almost entirely on the dead fish it finds along the shores. The Golden Eagle is more of a hunter. It has seldom been known to touch dead animals.

In the coast mountains of California, we finally found an aerie of a Golden Eagle that could be photographed. To the branch of a tall sycamore bending out toward the valley, the Eagles had carried a cartload of sticks and made a platform five feet across.

We made a close study of the castle in the

MR. FINLEY (right) AND MR. BOHLMAN (left) PREPARING TO MAKE PHOTOGRAPHIC STUDIES OF THE GOLDEN EAGLE'S HOME-LIFE

The nest was about 60 feet up in a sycamore tree, and contained two young Eagles. The camera was focused, a thread was attached to the shutter, and the pictures were taken from a distance by pulling the thread after the return of the parents

sycamore. These Eagles were successful hunters. We never saw the time when their larder was empty. The food of the young Eagles consisted almost entirely of ground squirrels. The first visit I made to the aerie after the Eaglets were hatched, I found the bodies of four ground squirrels lying on the rim of the nest. For miles along the lower hills, the ground was perforated with the burrows of these rodents. On rocky lookouts above, the Eagles had their regular watch-towers where they kept vigil.

The Golden Eagle cradled her eggs in the big sycamore the first week in March. The period of incubation lasted a month, for the eggs hatched on April 3d. At first the Eaglets were covered with soft, white down, rather poor garments for a hunter, but this coat lasted a full month. During this time, the youngsters grew from the egg till they weighed as much as a good-sized hen. Then black pinfeathers began to prick up through the down, first appearing on the wings and back. It was not till the first week in June that the Eaglets were fairly well clothed. The wings and feet were still very weak. The wing-feathers were slow in gaining the strength that was necessary to handle such heavy bodies. It required the continued efforts of both parents to hunt food for such ravenous children. It took many days of practicing on the nest edge by flapping their wings and much parental persuasion before the young Eagles sailed out from the castle in the sycamore. WILLIAM L. FINLEY.

The food of the Golden Eagle consists of fawns, rabbits, woodchucks, prairie dogs, and ground squirrels among mammals, and Turkeys, Grouse, and waterfowl among birds. At times it attacks also the young of domesticated animals, notably lambs, pigs, goats, and poultry. It has been known to attack calves and colts, but such instances must be exceptional and when the birds are hard pressed by hunger.

Over extensive areas of the West the Golden Eagle unites with other birds of prey to keep many species of noxious rodents in check, and must be considered beneficial. In the more thickly inhabited regions, however, where such food is scarce, they often do great damage by carrying off lambs, young pigs, kids, and poultry. As many as four hundred lambs are reported to have been taken from contiguous ranges in one season. It thus will be seen that in one region the bird should be protected and in another kept in check.

FALCONS

Order *Raptores;* suborder *Falcones;* family *Falconidæ;* subfamily *Falconinæ*

THE Falcons are in some respects the most remarkable, as they certainly are the most famous, of the birds of prey. Their savage and predacious disposition, swiftness of flight, and extraordinary keenness of vision suggested centuries ago their employment in the pursuit of other birds and small mammals, and thus arose the ancient sport of falconry, which is still followed to some extent in the Orient, though its obvious cruelty finally caused its abandonment in western Europe. In days when hawking was at its height in England, the rank of the individual could be told by the particular species of Falcon which he carried on his wrist: the Gyrfalcon was carried by royalty, the Peregrine Falcon was carried by an earl, the Goshawk by a yeoman, the Sparrow Hawk by a priest, and the Kestrel by a servant.

The true Falcons have the bill sharply hooked, toothed, and notched. The projecting bony eye-shield gives the bird a peculiarly stern and domineering expression. The legs are muscular; the talons curved, strong, and very sharp; the wings, long, strong, and pointed; the tail, rigid and comparatively short; the general build, powerful. The flight of all the species is remarkably swift, and the birds' movements on the wing are very quick and certain. Without apparent effort they overtake and kill in flight the swiftest flying Ducks, as well as Pigeons and Grouse. Their courage is great and they do not hesitate to attack birds much larger and stronger than themselves. Birds pursued by Falcons seem to realize that their only chance for escape is to keep above the enemy, and it often happens, therefore, that both birds may fly so high as to disappear entirely. Eventually, however,

GYRFALCON
Falco rusticolus gyrfalco Linnaeus

WHITE GYRFALCON
Falco islandus Brünnich

BLACK GYRFALCON *Falco rusticolus obsoletus* Gmelin
All ½ nat. size

the relentless pursuer will rise above his victim, and then in a few moments will come the savage and certain downward plunge, and the clutch of the merciless talons which means death in midair.

Because of these qualities the Falcons, with a few exceptions, such as the American Sparrow Hawk, are highly destructive to other birds; yet their bravery, skill, fleetness, and determination challenge the admiration of man, and often enlist his protection, or at any rate stay his hand which would be raised against a destroyer less courageous and less picturesque.

The nests of the Falcons are less bulky than are those of the Hawks and some species lay their eggs on a bare rock or in a hollow tree. The number of eggs varies from two to five but is most often four.

WHITE GYRFALCON

Falco islandus *Brünnich*

A. O. U. Number 353 See Color Plate 50

Other Name.— Greenland Gyrfalcon.

General Description.— Length: male, 22 inches; female, 24 inches. Spread of wings, 50 to 55 inches. Plumage, white. Tarsus covered with feathers about ⅔ down on front and sides, the feathers meeting at the back.

Color.— ADULTS: *Entire plumage, white,* the feathers of back, shoulders, middle and lesser wing-coverts with pale ashy drop-shaped crescents or arrow-head spots, the number varying with the individual; bill, bluish-horn, darker at tip; cere, edges of eyelids, and feet, livid bluish; claws, blue-black; iris, brown. YOUNG: Differing from adults only in being more heavily marked above and below, with dark brown in longitudinal streaks and spots.

Nest and Eggs.— NEST: In cavities of cliffs; composed of sticks, seaweed, and other materials which happen to be handy. EGGS: 2 to 4, whitish, so heavily spotted and suffused with different shades of reddish-brown as almost to appear uniformly of that color, with some spots of darker brown.

Distribution.— Arctic regions; resident in Greenland; in winter rarely south to Ontario, Nova Scotia, and Maine.

GRAY GYRFALCON

Falco rusticolus rusticolus *Linnæus*

A. O. U. Number 354

Description.— Differs from White Gyrfalcon only in color. ADULTS: General color, gray with darker markings; above about equally divided between the pale bluish-gray and the darker bars, crescents, or spots; *on head and neck, lighter shades prevailing;* under parts, whitish, *striped, streaked, or spotted with dusky*; bars of tail, well marked, the light and dark ones about equal in width; bill, bluish; cere, and feet, bluish-gray; iris, brown. YOUNG: Upper parts, browner; head, more narrowly streaked with darker shades; under parts more heavily streaked.

Nest and Eggs.— NEST: On cliffs or in trees. EGGS: Not distinguishable from those of the White Gyrfalcon.

Distribution.— Arctic regions; breeds in Arctic America from Alaska east to southern Greenland; in winter casual south to British Columbia, Kansas, Wisconsin, Ontario, and Maine.

GYRFALCON

Falco rusticolus gyrfalco *Linnæus*

A. O. U. Number 354a See Color Plate 50

Other Name.— MacFarlane's Gyrfalcon.

General Description.— Length, 24 inches; spread of wings, 50 to 55 inches. Color above, grayish-brown; below, white, streaked. Tarsus feathered half-way down the front and sides.

Color.— ADULTS: Upper parts, brownish-gray or grayish-brown, slightly marked with buffy-white; *head, unstreaked; under parts, white heavily streaked with grayish-brown;* a pronounced black mustache; tail closely barred with light and dark of about equal widths; bill, bluish horn color; legs, bluish-gray; claws, black; iris, brown. IMMATURE: Similar to adults, but head sometimes slightly streaked with lighter, and back almost uniform.

Nest and Eggs.— NEST: On ledges of cliffs; composed of sticks and small twigs and lined with feathers and other soft materials. EGGS: 2 to 4, commonly 3 or 4, varying from dull yellowish-red to a deep burnt-umber, finely and evenly speckled with reddish-brown.

Distribution.— Arctic regions; breeds in Ellesmere Land, northern Greenland, and east to Franz Josef Land; in winter casual south to Minnesota, New York, Rhode Island, Massachusetts, and Maine.

BLACK GYRFALCON

Falco rusticolus obsoletus *Gmelin*

A. O. U. Number 354b See Color Plate 50

Description.— A dark phase of the Gyrfalcon; uniformly dusky or brownish-slate, upper parts without bars, except broken ones on tail and under parts almost black with a few inconspicuous streaks or spots of buff.

Nest and Eggs.— Similar to those of the Gyrfalcon.

Distribution.— Breeds in Ungava; south in winter to Nova Scotia, Quebec, Ontario, and Maine; casually to New York, New Hampshire, Massachusetts, and Rhode Island.

The White Gyrfalcon, the Gray Gyrfalcon, the Gyrfalcon, and the Black Gyrfalcon form a subgenus of the *falco* genus in the Falcon family, known as *hierofalco,* a word signifying "sacred or noble Falcon." They are Arctic birds and never come very far south of the Arctic circle. All of these northern Falcons were formerly in great demand for the sport of hawking. Their flight is much swifter than that of the Peregrine or Duck Hawk, and they are very tenacious of grip when they have captured their prey, but they do not equal in dash and spirit the smaller Peregrine.

The White Gyrfalcon is seldom found even in mid-winter south of the 50th parallel. According to Holbœll they are the most abundant Falcon in Greenland, where they breed in January. They prey chiefly upon waterfowl and Ptarmigans; usually they build near bird rocks from which they obtain the young without much trouble. He mentions having seen one with a young Kittiwake in each foot, and two Sandpipers carried in the same manner. He did not regard its rapidity of flight as very great. He had for years kept Pigeons and lost only two young birds which were seized when at rest. Almost every day, especially in October and November, these Falcons would chase the old Pigeons unsuccessfully. They were not very shy and were occasionally decoyed and killed by throwing a dead bird toward them.

They go southerly along the coast of Greenland from September to November; at this time they are often seen fighting with the Ravens and will approach quite close to the houses of the Danes.

Drawing by R. I. Brasher

GYRFALCON (⅛ nat. size)

A visitor from "Greenland's icy mountains"

Courtesy of the New York State Museum

DUCK HAWK *Falco peregrinus anatum* Bonaparte

FIRST YEAR MALE

ADULT FEMALE

CHICKS AND EGG

All $\frac{1}{3}$ nat. size

PRAIRIE FALCON

Falco mexicanus *Schlegel*

A. O. U. Number 355

Other Names.— American Lanner (female) or American Lanneret (male).

General Description.— Length: male, 18 inches; female, 20 inches. Color above, brownish-ash; below, white, spotted. Outer primary notched on inner web; back of tarsus, broadly bare.

Color.— Adults: Above, brownish-ash, each feather with a paler border, crown more uniform, back of head and *nape more streaked;* primaries, darker brown, sharply edged with paler; tail, pale brownish-gray with barring or indentations of whitish, tip, white; under parts, dull white marked everywhere except on throat with firm spots of dark brown, more drop-shaped on breast, more oval on abdomen, enlarging and tending to form bars on flanks, absent or very few on under tail-coverts; a broad dark-brown streak from gape forming a mustache; bill, dark bluish horn, yellow at base and below; feet, yellow; iris, brown. Young: Differ from adults in showing more light brown above and in being more heavily spotted below on a buff or ocher ground; feet, livid.

Nest and Eggs.— Nest: On cliffs or on the steep faces of cut banks of streams; constructed of sticks with a lining of grass. Eggs: 2 to 5, creamy-white, almost entirely obscured with spots and splashes of cinnamon and chestnut.

Distribution.— From eastern border of the Great Plains and from southern British Columbia and southeastern Saskatchewan to southern Lower California and southern Mexico; casual east to Minnesota and Illinois.

The Prairie Falcon is the American representative of the Lanners and Lannerets of the eastern hemisphere. With short quick wing beats, like the Duck Hawk's flight, it sweeps over the western prairies and sage brush deserts. It is a bird of the open, resorting to the perpendicular side of cañons or isolated buttes to rear its young. From these commanding eminences its keen vision ranges over the many square miles of territory from which it takes its toll of birds and small rodents, especially of ground squirrels. Though ordinarily shy these Falcons are bold, daring hunters, pursuing and capturing their food with an impetuosity which almost equals the Duck Hawk's.

Their cry of *Wert-wert-wert-wert-wert* is a more mellow call than that of other Hawks, resembling the notes of the Rough-leg at nesting time. They utter two other calls — a rattling *k-r-rr,* rising in pitch at end, and a whining "kruk" very similar to the "clap" of the Flicker.

DUCK HAWK

Falco peregrinus anatum *Bonaparte*

A. O. U. Number 356a See Color Plates 43, 51

Other Names.— Peregrine Falcon; American Peregrine; Great-footed Hawk; Wandering Falcon; Tercel (male).

General Description.— Length: male, 18 inches; female, 19 inches. Spread of wings, 40 to 46 inches. Color above, bluish-ash; below, yellowish, barred. Outer primary notched on inner web; tarsus broadly bare at the base, only slightly feathered in the front, and about the length of the middle toe with claw; upper section of bill with an additional point or tooth near the tip and a corresponding notch in the lower section.

Color.— Adults: Feathers of extreme forehead, whitish; crown, sides of head to level of eyes behind, space in front and below eyes, *dark slate color; rest of upper parts, a fine dark bluish-ash,* all the feathers with paler edges but these lighter markings more obsolete on rump and upper tail-feathers; tail crossed with 5 or 6 narrow bars of black, the one nearest the tip much broader, tail, tipped with white; greater wing-coverts and secondaries barred; primaries, dark dusky-black tipped with whitish; *a strong black streak from gape forming a mustache,* and almost cutting off the *light yellowish under parts,* a patch of similar color on the side of the head; *throat whitish,* usually unmarked, as is also the breast; rest of under parts, closely and regularly barred with blackish brown, more pronounced and larger on sides and under tail-coverts; thigh feathers finely and regularly barred transversely with the same color, these markings tending to broad arrowhead shapes; bill, bluish-black, more yellow at base; cere, gape, and feet, yellow; claws, blackish; iris, dark brown. Young: The extreme forehead, lores, throat, and patch on side of head, plain pale tawny-white; crown, streak behind eye, mustache, and entire upper parts,

plain brownish-dusky; all the feathers, including coverts and secondaries, edged with lighter; primaries, darker dusky-brown tipped with lighter; tail, ashy, tipped with pale yellowish-white and crossed with 4 or 5 very narrow bars of light ash; beneath, pale tawny or yellowish-white marked lightly on breast, more heavily below, with wedge-shaped longitudinal spots of deep brown; bill, bluish-horn; cere and feet, dull yellow; claws, black; iris, brown.

Nest and Eggs.— NEST: Usually in crevices on inaccessible cliffs, more rarely in natural cavities of trees; no apparent attempt at any construction. EGGS: 3 or 4, dull white, usually so heavily colored with spots, blotches, and specks of reddish or dark brown as to obscure the ground color.

Distribution.— North and South America; breeds locally (except in northwest coast region) from Norton Sound, Alaska, northern Mackenzie, Boothia Peninsula, and western central Greenland south to central Lower California, Arizona, southwestern Texas, Kansas, Missouri, Indiana, Pennsylvania and Connecticut (in mountains to South Carolina); winters from southern British Columbia, Colorado, and New Jersey (occasionally further north) to the West Indies and Panama; occurs also in South America south to northern Chile.

The Peregrine Falcon (*Falco peregrinus peregrinus*) of the Old World is the noble Falcon of the days when hawking was the chief of sports. Casually it is found in Greenland but its best known American representative is the Duck Hawk. The only difference between the two birds is in the coloration of the throat and upper breast; in the Duck Hawk these are generally unmarked, but in the Peregrine they are marked with blackish-brown.

The quick wing beats resembling the flight of a Pigeon are quite different from the flight of the majority of other Hawks and readily identify the Duck Hawk in the field. Its strength and bearing appeal to our primitive sense of admiration for courage. While such traits are admirable, others less commendable cannot be ignored. The toll of life taken by the strong we accept as part of the scheme of things but wanton destruction revolts us and a Duck Hawk is sometimes so carried away by lust of slaughter that it will strike bird after bird from a flock of Sandpipers and leave the victims where they fall.

After the young are reared the parents proceed

DUCK HAWK ($\frac{1}{4}$ nat. size)

A fierce destroyer but a splendid success as a bird

Drawing by R. I. Brasher

to exemplify the fitness of the name given them by the scientists — *falco,* sickle, *peregrinus,* wandering, and *anatum,* of the Ducks. They seek maritime districts and change their diet from Partridges, Pigeons, Flickers and the like to shore birds and Ducks.

The usual method pursued in obtaining its prey is to rise in spirals until it is above the victim and then to drop directly upon it; seldom is it unsuccessful. Sometimes it captures its victims by direct chase or by a sudden assault. That they do not always look carefully before they strike was proved by one which passed over me while I was concealed in a duck-blind, struck one of the decoys, and knocked the head off. This is not an unusual incident, declare baymen who do a great deal of Duck shooting.

Considering the peculiar advantages the Duck Hawk possesses in the struggle for existence, it is remarkable how comparatively rare it is. Among birds it has no superior. The inaccessible location of its nest prevents animal depredations; even a wild-cat would think twice before attacking its home. The insatiable "egg-collector" is its worst enemy. R. I. Brasher.

Peale's Falcon (*Falco peregrinus pealei*) is a duskier slate above than the Duck Hawk, its crown is like its back, its breast is more heavily spotted with blackish, and there are broad bars of dusky on its under parts. This Black Hawk, as it is also called, inhabits the Pacific coast region from the Aleutian Islands to Oregon. It breeds throughout its range and is accused, in Alaska, of living largely on Auklets and Murrelets.

PIGEON HAWK

Falco columbarius columbarius *Linnæus*

A. O. U. Number 357 See Color Plate 52

Other Names.— Pigeon Falcon; American Merlin; Bullet Hawk; Little Blue Corporal.

General Description.— Length: male, 11 inches; female, 13 inches. Color above, dark brown; below, whitish. Two outer primaries notched on inner webs; tarsus but slightly feathered in front, broadly bare on back, and longer than middle toe without claw; not more than 4 blackish or 5 light bands crossing the tail.

Color.—Adults in Normal Plumage (as usually seen); Above, dark umber-brown, interrupted on neck by whitish streaks, most of feathers with paler edges and dark shaft lines; primaries, blackish with lighter tips and numerous oval transverse spots of cinnamon on inner webs; tail, umber-brown barred with about four narrow light ocher bands and tipped with white; beneath varying from dull white to a rich warm buff heavily streaked longitudinally with dark umber-brown except on throat which is distinctly whitish and marked only with fine shaft streaks; sides of head, buff finely penciled with dark streaks merging into a mustache extending from gape to bottom of throat; forehead and spot in front of eye, whitish; a dark line above and behind eye; bill, bluish horn; cere and feet, chrome yellow; claws, black; iris, deep brown. Adult Male in Full Plumage: Forehead, line over eye, lores, and throat, white; crown, back, shoulders, rump, coverts, and secondaries, fine purplish ash; crown, streaked with black; feathers of back, shoulders, and coverts with a strong distinct black shaft line; primary coverts barred with dusky; tail, grayish-ash banded with two exposed bars of blackish and a broad subterminal one of the same color tipped with white; primaries, deep dusky edged with whitish and with a number of transverse oval spots of whitish on inner web; the white line over eye continued to back of neck; sides of head, neck all around, breast, and under parts in general, a fine warm buffy, streaked narrowly on cheeks and sides of head, more strongly on neck and beneath, with blackish; the thigh feathers merely with black shaft streaks; a narrow but distinct dusky mustache; bill, bluish-horn; cere, skin around eye, and feet, chrome-yellow; claws, black; iris, deep brown. Young: Practically the same as normal plumage of adults, but birds of the year are usually lighter with more tawny and wider edges of feathers on upper parts.

Nest and Eggs.— Nest: On ledges, in branches of trees, or, occasionally, in a hollow tree; the tree nests constructed of sticks, weed stems, grass, or moss and lined with feathers and strips of soft inner bark; the ledge nests with very little material. Eggs: 4 or 5, white, thinly spotted, evenly or wreathed around either end, or so heavily splashed and blotched with rich chestnut-brown as to obscure the ground color.

Distribution.— North America to northern South America; breeds from northwestern Alaska and northwestern Mackenzie south in the mountains to California and southern Oregon, and from central Keewatin, northern Ungava, and Newfoundland south to northern Michigan, central Ontario, and Maine; winters from California and the Gulf States (casually further north) south through Mexico, Central America, and the West Indies to Ecuador and Venezuela.

The Pigeon Hawk is a stocky, well-built, impetuous miniature of the Duck Hawk, which it closely resembles in color and habits. It is widely distributed but nowhere common in the United States. This is fortunate, for its principal food is birds.

Many migrants from the New England States cross the Sound to Long Island, following the Great South Beach westward. I have found this Hawk most abundant there during October, pursuing the shore birds, especially Sanderlings and Ringed Plovers. Strong northwest winds are prevalent along this beach in the autumn and the Pigeon Hawks tack across the wind on their way westward and south. The short "board" is made directly into the wind's eye, then a long slant with the breeze on the quarter carries them well on their way to the westward. Sometimes a number of Hawks of different species can be seen as far as the eye can reach up and down the beach going through these maneuvers, crossing and recrossing each other on the different "tacks."

A darker colored form of the Pigeon Hawk is the Black Pigeon Hawk or Black Merlin (*Falco columbarius suckleyi*). The throat of the male is streaked with black, and the rest of the lower parts are brownish-black with chestnut and whitish markings; the lower parts of the female and the young male are heavily marked with dusky and the spotting of the wings is faint or absent. It inhabits the northwest coast region from northern California to Sitka, Alaska, and it is similar to the stock species in nesting and habits.

Richardson's Pigeon Hawk or Richardson's Merlin (*Falco columbarius richardsoni*) averages lighter in coloration than the Pigeon Hawk and its tail is crossed by five dark bands and six light ones. Otherwise, in color, in habits, and in nesting it is similar to the Pigeon Hawk. It is found in the interior of western North America; it breeds in the region of the Great Plains from southern Alberta and the middle of the Saskatchewan valley to northern Montana and North Dakota. It winters south to southern Lower California, northwestern Mexico, and southern Texas. It has also been seen in California, Missouri, and South Carolina.

R. I. Brasher.

SPARROW HAWK

Falco sparverius sparverius *Linnæus*

A. O. U. Number 360 See Color Plate 52

Other Names.—American Sparrow Hawk; American Kestrel; Rusty-crowned Falcon; Grasshopper Hawk; Mouse Hawk; Kitty Hawk; Windhover; Short-winged Hawk.

General Description.— Length, 11 inches. Color above, cinnamon-rufous; below, pale rusty and whitish. Two outer primaries notched on inner webs; tarsus but slightly feathered in the front, broadly bare on back, and decidedly longer than the middle toe.

Color.— Adult Male: Crown and back of head to about level of eyes, fine bluish-ash, enclosing a patch of chestnut; sides and back of neck, yellowish-white with a spot of dusky-ash on each side of neck; back and shoulders, cinnamon rufous, evenly barred with black; wing-coverts and secondaries, fine bluish-ash, the middle coverts and inner secondaries with subterminal wedge-shaped spots of black; primaries, pale dusky tipped with yellowish; tail, cinnamon rufous with a broad subterminal bar of black tipped with white; lores, throat, and sides of head, white with *a black streak below eye and another bordering the white area behind;* breast and upper abdomen, pale rusty; rest of under parts, whitish spotted on lower breast with small round blackish dots, on flanks with paler blackish wedge-shaped spots; under tail-coverts, pure white; outer tail-feathers, mostly white with black bars; bill, pale bluish-horn; cere, feet, and bare skin around eye, yellow; claws, black; iris, deep brown. Adult Female: Head and neck, as in adult male but usually with fine black shaft streaks on crown; back, shoulders, wing-coverts, secondaries, rump, and tail, cinnamon rufous; tail, banded with 5 or 6 imperfect black bars, the subterminal one broader, more distinct, feathers tipped with white; secondaries, dusky centrally, rufous showing as narrow edgings and tips, rest of upper parts including the coverts, barred with dusky; primaries, grayish dusky edged with yellowish-white; chest and lower parts in general pale yellowish-white with pale brownish longitudinal streaks; thigh feathers more whitish and unmarked; bill, feet, etc., as in adult male.

Nest and Eggs.— Eggs: Deposited in natural cavities of trees, deserted Woodpecker holes, in rock cavities, holes in banks, artificial nesting boxes, or in crannies of outbuildings, without nesting material; 4 or 5, ground color varying from creamy-white to reddish-buff, specked, spotted or clouded with shades of Indian red and brown, usually largest and more numerous or sometimes wreathed at greater end; some eggs minutely dotted all over with dark brown, some so heavily splashed as to conceal the ground color.

Courtesy of the New York State Museum

SPARROW HAWK *Falco sparverius sparverius* Linnaeus

MALE FEMALE

PIGEON HAWK *Falco columbarius columbarius* Linnaeus

ADULT IMMATURE

All ½ nat. size

Distribution.— North America east of the Rocky Mountains; breeds from the Upper Yukon, northwestern Mackenzie, southern Keewatin, and Newfoundland south to Texas and the eastern Gulf States (except Florida); winters from Kansas, Indiana, Ohio, and Massachusetts south through Mexico to Costa Rica.

The Sparrow Hawk is the smallest and the most sociable of our Hawks; it often nests in hollows of old orchard trees near farm houses or in dead trees alongside of roads.

"Windhover" is a very appropriate name, for they are much given to hovering over fields and pastures; they remain almost stationary for many minutes suspended in the air with quick-beating wings, and scan the ground below for grasshoppers and mice. Its familiar call of *killy-killy-killy-killy-killy-killy* attracts attention to its position.

Small birds are sometimes captured, but so rarely that I have not in many years' observations seen the deed performed, although I have found feathers of other birds in their nests.

Of all the Falcons, the Sparrow Hawk is the most beneficial. Of its food, Dr. A. K. Fisher says: "At times it attacks small birds and young chickens, but these irregularities are so infrequent that they are more than outweighed by its good services in destroying insects and mice. Grasshoppers, crickets, and other insects form its principal food during the warm months, while mice predominate during the rest of the year. Terrestrial caterpillars, beetles, and spiders also are eaten to a considerable extent. As might be expected, a large proportion of the birds captured are taken during the nesting season, the Hawks then having less time to procure their favorite food. It is at this time also that they commit depredations in poultry yards. During late fall and winter, meadow mice and house mice form a large part of their food, the former being taken in fields and meadows and the latter around corn stacks and about barns and outbuildings."

R. I. Brasher.

The Desert Sparrow Hawk (*Falco sparverius phalæna*) is larger than the stock form, with longer tail; its colors are paler, with more rufous and a larger crown patch. The female has the dark bars of upper parts narrower; those of tail more broken or incomplete. It inhabits western North America, breeds from British Columbia and southwestern Saskatchewan south to southern California, New Mexico, and western Texas east to Wyoming and western Nebraska, and winters from British Columbia and Colorado south to Guatemala.

Photo by S. A. Lottridge

SPARROW HAWK

The smallest and most sociable of our Hawks

The Little Sparrow Hawk (*Falco sparverius paulus*) has been honored with subspecific distinction because specimens smaller than the average have been captured in Florida, beyond the confines of which State it is requested not to roam!

CARACARAS

Order *Raptores;* suborder *Falcones;* family *Falconidæ;* subfamily *Polyborinæ*

THE Caracaras are vulture-like Hawks found chiefly in Central and South America. They are diurnal birds of prey. The name is an attempt to reproduce in syllables the bird's raucous cry. All of the species have long, unfeathered legs and plumage in which black and white predominate. The feathers on the crown are elongated sufficiently to form a crest which can be raised at will, and there are well developed bristles on the cheeks. The Caracaras are essentially carrion feeders and for this reason they are valuable, especially in the cattle-raising regions in South America where they have become quite abundant. "Their flight is strong, rapid, and direct, and bears no resemblance to that of a Vulture." (Chapman).

The Caracaras are divided into three genera, *Polyborus*, *Milvago*, and *Ibycter*, of which the first-named comprises four species, including the Audubon Caracara. All of these birds build in trees, or on ledges, large nests composed of sticks and leaves, and lay two or three eggs thickly speckled and blotched.

AUDUBON'S CARACARA

Polyborus cheriway (*Jacquin*)

A. O. U. Number 362

General Description.— Length, 25 inches. Fore parts whitish, barred with black; rest of plumage black. Skin of face nearly bare, the chin and sides of head having blackish bristles; bill, long, compressed, and slightly hooked; tarsus, nearly twice as long as middle toe without claw.

Color.— ADULTS: Throat, neck all around, front part of back, and breast, dull whitish barred with black; upper and under tail-coverts, white; tail dull white with numerous bars of blackish, the terminal one being much broader than the others; crown and rest of plumage, blackish; bill, dull horn; cere, red or yellow; feet, yellow; claws, black; iris, brown. YOUNG: Plumage more brown, darker markings of body, longitudinal streaks, not transverse bars; tail, as in adult.

Nest and Eggs.— NEST: Built in trees, bushes, sometimes in cliffs; large bulky structures composed of branches lined with small sticks, roots, and grasses, and with a slight depression. EGGS: 2 or 3, light chestnut to dark reddish or umber-brown, speckled, blotched, or clouded with yellowish or rufous-brown, burnt-umber, or purple madder, sometimes distributed over entire egg; in others more numerous at one end.

Distribution.— Northern Lower California, Arizona, Texas, and Florida south to Guiana and Ecuador; accidental in Ontario.

Photo by O. E. Baynard Courtesy of Nat. Asso. Aud. Soc.

AUDUBON'S CARACARA, ONE DAY OLD, AT EDGE OF NEST

Perched upright in the cactus or mesquite, with a strange grandfatherly appearance, or flying slowly with stiff outstretched neck, Audubon's Caracara strikes the observer with singular grotesqueness. An odd performance in which it indulges is to throw the head so far backward as to touch the shoulder feathers, emitting while in this position, its hoarse raucous call. Among themselves they are quarrelsome, stronger individuals attacking and sometimes severely injuring weaker ones. These fracases, though apparently starting in a spirit of play, often end in a general fight.

Though usually carrion feeders, in some maritime locations the Caracaras lay tribute on Pelicans as they come ashore, compelling them by attacks from above to disgorge the fish with which their pouches are filled.

Drawing by R. I. Brasher

AUDUBON'S CARACARA (¼ nat. size)

Perched upright in a cactus, it has a strange grandfatherly appearance

OSPREYS

Order *Raptores;* suborder *Falcones;* family *Pandionidæ*

NEWTON, the English ornithologist, explained that "Ospray" or "Osprey" is "a word said to be corrupted from 'ossifrage,' in Latin *Ossifraga*, bone-breaker. The Ossifraga of Pliny and some other classical writers seems to have been the Lammergeier; but the name, not inapplicable in that case, has been transferred—through a not uncommon but inexplicable confusion—to another bird which is no breaker of bones, save incidentally those of the fish it devours."

Three or four species of Ospreys have been described, but most ornithologists are now agreed that there is but a single true species, the European Osprey (*Pandion haliaëtus*), of which the American Osprey and the Australian Fishing Eagle are subspecies. In all of these forms the feet are large, very strong, equipped with scale-like processes, and with the claws long, sharp, and powerful; the outer toe is reversible, like that of the Owls; the legs are long and closely feathered. The bill has no tooth, but is much hooked. The plumage is oily and overlapping, the quills and tail-feathers pointed and rigid. The wings are long and pointed, the tail short.

The Ospreys, or Fish Hawks, as they are usually called in America, have a very wide distribution, being found everywhere except in New Zealand, Iceland, Australia, the southern part of South America and, of course, the extreme Arctic and Antarctic regions. Their food consists solely of fish taken alive. Because of this characteristic they are never found far from water in which fish may be had. Since the Ospreys cannot dive, as do the Ducks, the fish they catch are of the varieties found in shallow water or near the surface.

The Ospreys are not more sociable than other raptorial birds; but an abundant food supply together with freedom from interference will often result in a number of them nesting near one another, and sometimes quite a large colony will develop. They return year after year to the same site and even rehabilitate the old nests by the addition of more material.

OSPREY

Pandion haliaëtus carolinensis (*Gmelin*)

A. O. U. Number 364 See Color Plate 43

Other Names.— American Osprey; Fish Hawk; Fishing Eagle.

General Description.— Length, 2 feet; spread of wings, 4½ to 5½ feet. Upper parts, dark brown; head and under parts, white.

Color.— ADULTS: Head, neck, and *entire lower parts, pure white; a broad brownish-black stripe across upper side of head to nape;* head narrowly streaked with blackish coalescing toward center; nape, pale yellowish-white thinly streaked; breast with large heart-shaped spots of brown on each feather, the shaft black (these spots more numerous in female, fewer in male); rest of lower parts unmarked; *back, shoulders, wings, and tail, deep burnt-umber* with a faint purplish gloss; tail barred with seven even bands of dusky, inner webs and tip, white; the feathers of the upper parts are edged with paler; bill, bluish-black; cere and feet, grayish-blue; claws, black; iris, yellow or red. YOUNG: More marked with buffy and brownish on neck and under parts; upper parts, edged and notched with whitish; tail, more barred.

Nest and Eggs.— NEST: In a tree or on the ground; composed principally of coarse sticks, seaweed, and any old rubbish which is handy. EGGS: 2 to 4, usually 3, yellowish or dull white, spotted and blotched with Indian red and different shades of brown, sometimes so heavily at the large end as to obscure the ground color; some marked at small end, and others almost plain.

Distribution.— North and South America; breeds from northwestern Alaska, northwestern Mackenzie, central Keewatin, southern Ungava, and Newfoundland south to Lower California, western Mexico, and the Gulf coast; winters from the southern United States through Lower California and Mexico to the West Indies and Central America; occurs also in South America south to Peru and Paraguay.

Drawing by R. I. Brasher

OSPREY (⅛ nat. size)

His feet are perfect fish traps

Photograph by G. W. Leek

OSPREY SETTLING ON ITS NEST

The Osprey's feet, with their rough, spiny projections, long and well-curved claws, are perfect fish traps: add powerful wings and tail, with plenty of muscular energy to operate them, and we have a combination which rarely misses its finny prey.

Its keenness of vision is of a very high order, and it is able to see a neutral colored fish from a height of many feet. Though most plunges begin within a hundred feet or so of the surface, dives of three hundred or more feet are not uncommon. Kingfishers seize their prey with their bill but the Osprey, like other raptorial birds, uses its feet only. The captive is always carried head forward. Some authorities suggest that this position makes wind resistance less, but it seems more reasonable to me to suppose that placing the talons one in front and one behind is done the better to control the spasmodic jerks of the expiring fish.

Occasionally the Osprey mistakes the size of its quarry, and I saw one on the St. Lucie River in Florida dragged under by a large intended victim. The Osprey finally succeeded in getting its claws free, but was so nearly drowned that it lay on the yacht's deck for ten minutes before recovering sufficiently to fly.

Where protected — and I am glad to say that is everywhere in the East — it often nests in colonies, one of the largest of which is on Gardiners Island, off the eastern end of Long Island. Its harmless character is so well understood by the Purple Grackles that frequently they build their own homes in the interstices of the large bulky nest which the Fish Hawk builds.

R. I. Brasher.

Photograph by H. T. Middleton

OSPREY

OWLS

Order *Raptores;* suborder *Striges;* families *Aluconidæ* and *Strigidæ*

OWLS are nocturnal birds of prey and in the field of usefulness are the complement of the Hawks—the Hawks working by day and the Owls by night. Like the other raptorial birds Owls capture their prey with their feet. If the victim is not too large, it is swallowed entire and the hair and bones disgorged afterward in the form of pellets. It is the examinations of these pellets which have proved beyond a doubt that the Owls should be classified among the beneficial birds.

The eyes of Owls are directed forward so that both look in the same direction and to look to the side they are obliged to turn the head; the eyes are surrounded by radiating systems of feathers called facial disks, which are bounded, except directly in front, by a line or rim of small, narrow, stiff, compactly webbed, differently formed, and somewhat recurved feathers. For scientific purposes the Owls are divided into two families, the *Aluconidæ*, or Barn Owls, and the *Strigidæ*, which includes the Horned or Eared Owls, the Barred Owls, the Screech Owls, and all the other Owls.

Speaking generally, the Barn Owls have the face heart-shaped, with the lower apex very prominent. The various species have a complete and conspicuous facial ruff, relatively small eyes, elongated bill, long legs with feathering on the posterior part reversed (pointed inward), inner toe as long as the middle toe, the head without ear-tufts. The eyes are very small (beadlike), surrounded by a very conspicuous line of differently formed feathers. The wing is very long; the tail less than half as long as the wing and more or less distinctly notched. The claws are very long and sharp. The plumage coloration is prevailing white, buff, or tawny, and is usually more or less freckled or otherwise variegated (at least on the upper parts) with brown or dusky. The range of the genus is nearly cosmopolitan, the colder regions excepted. Nearly 30 forms are recognized, of which about one-third are American, but only one of which is found in the United States.

Unlike the Barn Owls, the *Strigidæ* have the face more or less circular, or at least not pointed below, while the leg-feathers (if present) are not reversed or recurved, but are pointed downward. The head is frequently surmounted by a pair of more or less distinct, often very conspicuous, ear- or horn-like tufts of feathers, and the eyes are, as a rule, large and prominent; but there are numerous genera in which these features are not present.

As in the Barn Owls, the *Strigidæ* have the plumage remarkably full, soft, and downy, and in coloration more or less protective. The sexes are invariably colored essentially alike. Frequently the plumage is dichromatic, different individuals of the same species, wholly independent of sex or age, differing remarkably in coloration, the extreme phases being represented by birds of a gray or brownish gray color on the one hand and others of a more or less cinnamon-rufous or brick-red hue, individuals of intermediate coloration being usually much less numerous than those representing the extremes. These distinct phases are constant from first plumage to old age, and are frequently to be found in one brood of young.

The *Strigidæ* are more nearly cosmopolitan than the Barn Owls, being absent only from Polynesia, representatives of the family existing in Madagascar, New Zealand, the Hawaiian Islands and the Arctic districts. Thirty recent genera and nearly three hundred species and subspecies are recognized, of which eighteen genera and about one hundred species (including subspecies) are American.

Owls generally place their nests in holes in trees or banks, or they may use the deserted nest of a Hawk or a Crow. The eggs are from three to five in number and are invariably pure white. Young Owls are thickly covered with white down.

BARN OWL

Aluco pratincola (*Bonaparte*)

A. O. U. Number 365 See Color Plate 53

Other Names.— Monkey-faced Owl; Golden Owl; White Owl; Monkey Owl; American Barn Owl.

General Description.— Length, 18 inches; spread of wings, 44 inches. Plumage, whitish-tawny, speckled with black.

Color.— AVERAGE PLUMAGE: Ground color of upper parts, bright *ochraceous-buff* but this overlaid with a delicate *mottling of dusky and grayish-white,* forming a mottled grayish effect, each feather, except of wings and tail, with a streak of black inclosing a small heart-shaped, roundish, or drop-shaped (rarely linear) subterminal spot of white; wings with the darker mottlings condensed into indistinct transverse bands, which are about 4 in number on secondaries and 5 on primaries; tail, varying from ochraceous-buff to white, mottled with dusky, and crossed by about five bands of mottled dusky; *face, white,* tinged with purplish-brown, and with an area of dark red-brown in front of and narrowly surrounding eye; facial circle or rim, soft ochraceous-buff above (down to ears), deeper ochraceous-buff below, where feathers of rear border are tipped with dark brown; *under parts, white,* but this suffused or overlaid by ochraceous-buff and with numerous small but distinct spots or dots of black; bill, dull yellowish; iris, dark brown. DARK EXTREME: Under parts, wholly ochraceous-buff, speckled with black; upper parts as in average plumage or somewhat darker; face more strongly tinged with purplish-brown. LIGHT EXTREME: Face (except spot below eye) and entire under parts, pure white, the latter sometimes immaculate; facial rim, white with tips of feathers (in part, at least) orange-buff; wing and tail, sometimes uniformly mottled or the latter sometimes white with bands of mottled dusky.

Nest and Eggs.—NEST: Almost anywhere—in church towers, outbuildings, hollow trees, holes in steep banks, deserted nests, or even in ground burrows; constructed of a few sticks, hay, straw, bones, or other refuse. EGGS: 3 to 11, usually 5 to 7, dull white, unspotted.

Distribution.— Greater part of United States and Mexico; breeding north to Long Island, New Jersey, Pennsylvania, western New York, Ohio, northern Indiana, northern Illinois, southern Nebraska, Colorado, and upper Sacramento valley, northern California, and occurring, more or less irregularly, farther northward to Massachusetts, Vermont, Ontario, Michigan, Wisconsin, Minnesota, Oregon, and southern British Columbia; southward over whole of Mexico, whole of Lower California, and eastern Central America to eastern Nicaragua, at least in winter.

Courtesy of S. A. Lottridge

YOUNG BARN OWLS

Courtesy of the New York State Museum

BARN OWL
Aluco pratincola (Bonaparte)

LONG-EARED OWL
Asio wilsonianus (Lesson)

$\frac{1}{3}$ nat. size

Some years ago, I had a good opportunity to make an intimate study of a Barn Owl family. They had a nest in the gable end of my neighbor's barn and occupied it for a number of years. This year they had three young, and at three weeks old they were the funniest, fuzziest, "monkey-faced" little creatures I had ever seen. They blinked, snapped their bills, and hissed like a box full of snakes. They bobbed and screwed around in more funny attitudes than any contortionist you ever saw.

We crept out one night and hid in a brush heap by the barn. Before long the scratching and soft hissing of the young Owls told us that their breakfast time had come. The curtain of the night had fallen. The day creatures were at rest. Suddenly a shadow flared across the dim-lit sky. The young Owls in some way knew of the approach of food, for there was a sudden outburst in the nest box like the whistle of escaping steam. Again and again the shadow came and went. Then I crept into the barn, felt my way up and edged along the rafters to the old box. As soon as food was brought, I lit a match and saw one of the half-grown young tearing the head from the body of a young gopher.

Barn Owls are always hungry. They will eat their own weight in food every night, and more, if they can get it. To supply such ravenous children, their parents ransack the gardens, fields and orchards industriously night after night and catch as many mice, gophers, and other ground creatures as a dozen cats. For this reason, it would be difficult to find birds that are more useful about any farming community. Yet many times people kill these Owls through ignorance of their value or from idle curiosity.

A case is on record where a half-grown Barn Owl was given all the mice it could eat. It swallowed eight, one after another and the ninth followed all but the tail, which for a long time hung out of the bird's mouth. In three hours, this same bird was ready for a second meal and swallowed four more mice.

The Owl is not particular when he eats. He put his feet on his game to hold it, then tears it to pieces with his hooked beak, swallowing the entire animal, meat, bones, fur, and all. In the stomach, the nutritious portions are absorbed and the indigestible matter is formed into round pellets and disgorged. About the Owl's roost or near its home, one may often find these pellets in great numbers. A scientist, by examining these, can tell exactly what the bird has been eating. He can also get a careful estimate of the size and number of the Owl's meals.

The best known record we have concerning the food of the Barn Owl is that which was made from a pair that occupied one of the towers of the Smithsonian Institution at Washington, D. C. Dr. A. K. Fisher, who is our greatest authority on the food of Hawks and Owls, examined two hundred pellets from this pair of birds. These showed a total of 454 skulls. There were 225 meadow mice, 2 pine mice, 179 house mice, 20 rats, 6 jumping mice, 20 shrews, 1 star-nosed mole and 1 Vesper Sparrow.

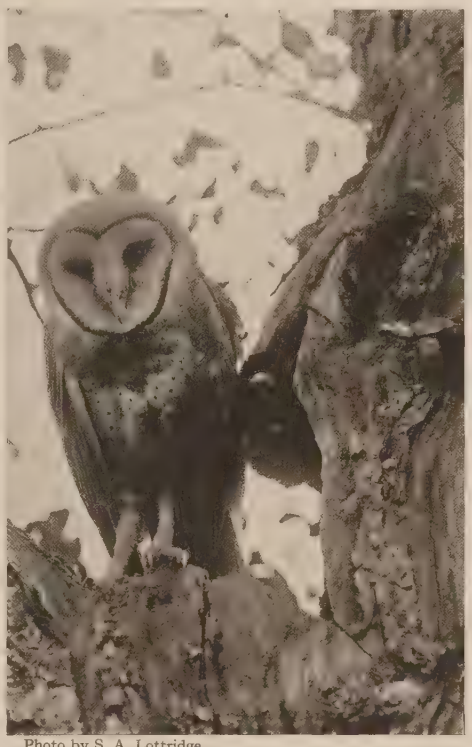


Photo by S. A. Lottridge

BARN OWL

It is always hungry and will eat its own weight in food every night

WILLIAM L. FINLEY.

LONG-EARED OWL

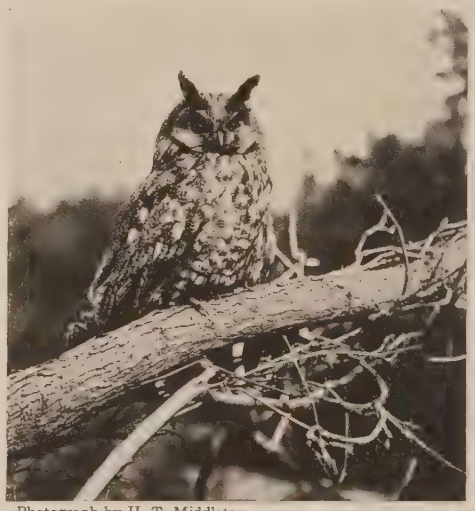
Asio wilsonianus (*Lesson*)

A. O. U. Number 366 See Color Plate 53

Other Names.— American Long-eared Owl; Cat Owl; Lesser Horned Owl.

General Description.— Length, 16 inches; spread of wings, 40 inches. Color above, a mottling of blackish-brown and grayish-white; below, white and buff, barred and spotted with brown. Ear-tufts conspicuous.

Color.— ADULTS: Above, mottled with blackish-brown and grayish-white, the former predominating, especially on back; shoulders with a few irregular, indistinct spots of white on outer webs; primary coverts, dusky with transverse series of mottled grayish spots, these becoming more buffy basally; ground color of primaries, grayish, especially on inner quills, passing into buffy basally (extensively on outer quills), the grayish portion finely mottled, transversely, with dusky, and crossed by about seven transverse series of square blackish-brown spots, those in front about as wide as the buffy or mottled grayish interspaces; secondaries crossed by about nine or ten bands of dusky; general color of wing-coverts like back, but growing paler toward edge of wing, their tips also pale (sometimes nearly white); tail banded like secondaries; ear-tufts with center portion (broadly) plain black, the edges of the feathers (broadly) buff, passing into white (usually broken by blackish lines or mottling) terminally; forehead and behind ears minutely speckled with blackish and white; "eyebrows" and lores, grayish-white, the eyes surrounded by blackish, this widest in front, above, and below; face, plain dull ochraceous; facial disk, black becoming broken into a variegated collar across throat; chin and upper throat, plain white; general color of under parts, buff, the exposed surface of the feathers, however, white; breast with large longitudinal center blotches of clear sooty-brown; sides and flanks with center stripes of sooty-brown crossed by as broad, or broader, transverse bars of the same; abdomen, leg plumes, and legs, plain buff, passing into nearly white on lower leg and on toes, the thigh-plumes usually with a few arrowhead spots of brownish; under tail-coverts with center narrow stripes or streaks of dusky, these Y-shaped forward; under wing-coverts, plain ochraceous, the under primary coverts blackish-brown, forming a conspciuous spot; bill, dull black; iris, bright lemon-yellow. YOUNG: Wing- and tail-feathers (if developed) as in adults; other portions broadly barred with blackish-brown and grayish-white, the latter predominating anteriorly; "eyebrows" and loral bristles, black; legs, white.



Photograph by H. T. Middleton

LONG-EARED OWL

With ear-tufts elevated

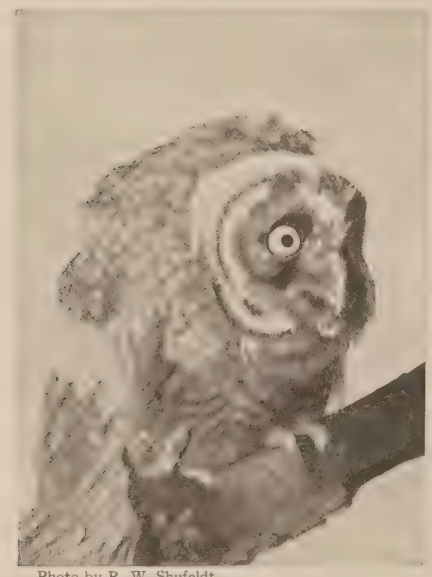


Photo by R. W. Shufeldt

LONG-EARED OWL

An industrious mouser, doing an enormous amount of good

Nest and Eggs.— NEST: Built in dense growth of coniferous trees, from 10 to 40 feet up, a carelessly made affair of sticks and lined with grass, old leaves, or feathers; frequently an old Crow's, Hawk's or squirrel's nest is appropriated and repaired; more rarely it is placed on the ground. EGGS: 3 to 7, usually 4 or 5, white.

Distribution.— Temperate North America; north to Newfoundland, southern Quebec, northwestern Ontario, southern Keewatin, southern Mackenzie, British Columbia, and coast of southern Alaska; breeding southward to Virginia, Arkansas, northern Texas, southern California, etc.; winters over greater part of its range and southward to central Mexico.

Most Owls whose habits are essentially nocturnal pass the daylight hours in hollow trees or in other cavities or recesses in which little or no light can enter. The Long-eared species, however, though it does all of its hunting at night usually spends the day perched in thick foliage of evergreen or other densely leaved trees. When discovered in such a hiding place its characteristic performance is to raise itself to its full height, compress its feathers close to its body and elevate its ear-tufts, in which protective and rather comical pose, it looks more like a stub, or "a piece of weatherbeaten bark than a bird."

Unlike that of the Great Horned Owl and other members of the Owl family, this bird's flight is rather wavering and uncertain, suggesting that of a Whip-poor-will; but like theirs it is entirely noiseless, and silence is, of course, more effective than mere speed with a great rushing of wings would be to a bird of its habits. It has several characteristic cries, one of which resembles the yapping of small dogs, and another the mewing of kittens, while at close quarters with an intruder it is likely to snap its beak and hiss with a great show of ferocity. This Owl is not infrequently seen in considerable flocks.

The Long-eared Owl is an industrious mouser, and molests comparatively few birds. Dr. Fisher examined 107 stomachs of this Owl, of which fifteen were empty. Of the ninety-two remaining, eighty-six, or over 93 per cent., contained remains of small mammals. As the bird is common all over the United States, it does an enormous amount of good. Like the Sparrow Hawk, this Owl is easily destroyed, and so is one of the greatest sufferers when bounties are paid for the destruction of birds of prey.

Photo by H. K. Job Courtesy of Outing Pub. Co.

YOUNG LONG-EARED OWLS

SHORT-EARED OWL

Asio flammeus (*Pontoppidan*)

A. O. U. Number 367 See Color Plate 56

Other Names.— Marsh Owl; Swamp Owl; Prairie Owl.

General Description.— Length, 14 inches; spread of wings, 42 inches. Color, a variegation of yellowish-white and dark brown. Ear-tufts, rudimentary and inconspicuous.

Color.— Adults: General color of head, neck, back, shoulders, rump, and under parts, light ochraceous to buffy-white (the individual variation being very great), each feather, except on rump, with a center stripe of dark brown or blackish-brown, the stripes broadest on shoulders, back of head, hindneck, back, and chest with the ochraceous (or buffy) and brown about equal in extent; but on the under parts the brown stripes becoming gradually narrower behind, until on abdomen and sides they form narrow lines; flanks, legs, anal region, and under tail-coverts, immaculate, the last nearly (sometimes quite) pure white, the legs more deeply buffy or ochraceous; rump more reddish-buffy or ochraceous, with indistinct crescentic markings of brown; wing-coverts coarsely variegated with irregular markings of dusky-brown and ochraceous or buffy, the latter in form of indentations or confluent spots along edges of feathers, broadest on outer webs; secondaries, dusky-brown crossed by about five bands of ochraceous or buffy, the last one terminal; primaries, ochraceous or buff on inner two-thirds (more or less), the end portion dusky-brown, tipped (broadly) with buffy, this becoming indistinct or obsolete on longest quills, the dusky-brown continued in three to five irregularly transverse series of square spots on outer webs, leaving, however, a large basal area of plain ochraceous or buffy, which sometimes passes into white in front; primary coverts, plain blackish-brown, with one or two indistinct transverse series of ochraceous spots on middle portion; tail, ochraceous or buff passing into white, crossed by about five bands of blackish-brown, about equal in width to the ochraceous or buffy interspaces on middle feathers but becoming narrower on outer ones, the ochraceous or buffy interspace on the former enclosing central transverse spots of dusky, the terminal ochraceous or buffy band broadest on all the feathers; "eyebrows," lores, chin, and throat, dull white, the loral bristles with black shafts; face, dingy

ochraceous-white or dull buffy-white, the eyes broadly encircled with black; facial rim minutely speckled with pale ochraceous or buffy and blackish, except immediately behind ear, where uniform blackish; under wing-coverts, immaculate pale buff to white, the terminal half of under primary coverts, plain blackish-brown (forming a conspicuous spot); under surface of primaries for greater part, immaculate buffy-white, but terminal portion, and preceding this, one or two very broad bands, dusky; bill, blackish; iris, bright lemon-yellow. YOUNG: Above, dark sooty-brown, the feathers broadly tipped with ochraecous-buff; face, uniform brownish-black; under parts, plain pale dull ochraceous or buffy, tinged forward with smoky-grayish.

Nest and Eggs.— NEST: Placed on the ground of marshy levels, beneath bushes, grass clumps, or in a slight depression; a carelessly constructed affair of a few sticks and grass, lined with finer grass and some feathers of the parent bird. EGGS: 4 to 7, white, unspotted.

Distribution.— The whole of continental North and South America, from coast of Arctic Ocean to Patagonia, also Tierra del Fuego, Falkland Islands, and Juan Fernandez and Mas-a-tierra islands, off Chile; breeding, locally, nearly throughout its range except in more southern portions of eastern United States, where not ascertained to breed south of Massachusetts, northern Ohio, northern Indiana, Missouri, Kansas, and Colorado; winters practically throughout United States and in Cuba; also found throughout Europe and northern Asia and other portions of the eastern hemisphere except Australia.

Marshes and bogs are the preferred habitat of this small and rather stupid Owl, the Short-eared, and the bird is seldom seen perched in a tree. It is also un-Owl-like in that in cloudy or foggy weather it may do considerable hunting during the day. Seen under such conditions, skimming along near the ground, the bird's long wings make it appear much larger than it is.

Another of this Owl's peculiarities is its gregarious instinct, as manifested in winter and during the migration period. Then it is likely to gather in colonies or flocks of a hundred or more individuals, some of which probably have come from the bird's northern range.

Though this Owl's ear-tufts are smaller than are those of the Long-eared species, the bird's

Photograph by H. K. Job

NEST OF SHORT-EARED OWL

Nine young, all sizes, and feathers and remains of prey

Courtesy of the New York State Museum

GREAT GRAY OWL *Scotiaptex nebulosa nebulosa* (J. R. Forster)

SNOWY OWL *Nyctea nyctea* (Linnaeus)

BARRED OWL *Strix varia varia* Barton

All ⅛ nat. size

ear openings are much larger, in fact almost cavernous in their proportions. This remarkable development is due to the bird's dependence upon its sense of hearing. For in the long grass the movements of much of its prey cannot be seen, and must therefore be heard; and close observation of the Owl will show that much of its hunting is done with its ears rather than eyes.

Of the economic value of this Owl, Dr. A. K. Fisher reports: "Fully 75 per cent. of its food consists of mice; as many as six of these mammals have been found in one stomach. In the West it probably feeds also on the small ground squirrels. Among birds, the Sparrows inhabiting the meadows and prairies are most often taken. In an interesting article by Peter Adair, in the 'Annals' of Scottish Natural History for October, 1893, on the disappearance of the short-tailed vole that caused the vole plague in Scotland in 1890–1892, the statement is made that farmers and shepherds attribute its disappearance largely to its natural enemies, stress being laid on the services of the Owl, Kestrel, Rook, and Black-headed Gull among birds and the stoat and weasel among mammals. These men are also of the opinion that this vole plague resulted from the destruction of birds of prey. When the plague first began the Short-eared Owl was hardly known in the district, but, swarming thither, it bred till it was so numerous that it became an important factor in reducing the number of voles."

BARRED OWL

Strix varia varia *Barton*

A. O. U. Number 368 See Color Plate 54

Other Names.— Hoot Owl; Rain Owl; Wood Owl; Round-headed Owl; Swamp Owl.

General Description.— Length, 20 inches; spread of wings, 44 inches. Plumage, brown, barred with whitish. No ear-tufts or horns.

Color.— ADULTS: Fore and upper parts, *broadly and regularly barred with pale buff and deep brown,* the latter color always terminal, the brown bars rather broader than the paler ones on upper parts, but on the neck and chest rather narrower; breast also barred with brown and whitish, but the brown bars connected by a center streak, thus separating the whitish into pairs of spots on opposite webs; each feather of abdomen, sides, and flanks with a broad center longitudinal stripe of darker brown, the under tail-coverts with similar but rather narrower stripes; anal region immaculate buffy or buffy-white; legs with numerous but rather faint transverse spots or bars of brown; general color of wings and tail, brown; middle and greater coverts with roundish transverse spots of white on outer webs, the lesser coverts, plain deep brown; secondaries, crossed by about six bands of pale grayish-brown passing into paler on edges, the terminal band passing into whitish on margin; primary coverts with four bands of darker buffy-brown or ochraceous-brown; primaries with transverse series of square spots of pale brown on outer webs (growing deeper brown on inner quills), the last terminal (there are about eight spots on longest primary); tail, crossed by six or seven sharply defined bands of pale brown, the last terminal; face, grayish-white or pale brownish-gray, with concentric semi-circular bars of brown; "eyebrows" and lores, dull grayish-white with black shafts; a narrow crescent of black against front angle of eye; facial circle a mixture of blackish-brown and buffy-white bars, the former predominating across foreneck where the brown forms disconnected transverse spots; *bill, dull buff-yellowish; iris, very dark brown or brownish-black,* the pupil appearing blue by contrast; naked portion of toes, dull yellowish or yellowish-gray, the large scales, more decidedly yellow, the soles, deep yellow; claws, dark horn color, becoming blackish terminally. YOUNG: Head, neck, and entire under parts broadly barred with rather light brown and pale buffy and whitish, the brown and pale bars about equal in width; back, scapulars, and wing-coverts similarly barred but the bars broader, the brown ones of a deeper shape, and each feather broadly tipped with white; wing- and tail-feathers (if developed) as in adults.

Nest and Eggs.— NEST: Almost always in a hollow tree, on the old chips, but sometimes in a deserted Crow's or Hawk's nest. EGGS: 2 to 4, usually 3, white, unspotted.

Distribution.—Middle eastern North America; breeds north to Newfoundland, southern Quebec, northern Ontario, southern Keewatin, Manitoba, and Saskatchewan; west to eastern Montana, eastern Wyoming, and eastern Colorado; south to Virginia, western North Carolina, northwestern South Carolina, northern Georgia, Tennessee, Kentucky, southern Illinois, Missouri, and northern Arkansas, and occasionally to Louisiana.

The Barred Owl is a bird of the deep solitudes. Where in the low grounds along the rivers or on lake-shores nature has built her densest growth of forest trees, or where, in forbidding swamps, trees and vines struggle for the mastery in one interminable jumble, there you will find the Barred Owl and his mate. If it be in the spring you may hear his big voice booming

through the solitudes. For when night has fallen the big Swamp Owl must be up and doing. *Whoo, whoo, whoo, who, who, to-hoo-ha!* he shouts, emphasis and great stress being laid on the last two syllables as though he would question your presence, and challenge your right to invade his domain. The volume and variety of these *who, who* call notes is one of the wonders of the wilderness and when two or three males get to discussing affairs together the animation they inject into the melody is quite alarming to a timid person not accustomed to the sounds. Of all the Owls, these bar-breasted fellows are pre-eminently the most proficient hooters.

This owl-music is usually heard mainly in the fore part of the night. Long before midnight it dies down, only to spring up again before sunrise. During the day they seldom call except in rainy or cloudy weather. On moonlight nights their serenade is at times continuous. They seem to possess a certain amount of curiosity, and will often respond to a human imitation of their notes even though it be but rudely rendered. In Florida on one occasion five of these birds came close about my camp one night and from the trees overhead looked down at the fire while every one in his own language hooted and called with an energy worthy of a better subject.

Barred Owls begin nesting as early as March or April. They appear never to build a nest of their own and not infrequently select a deserted nest of a Crow or a Hawk. More often they seek the hollow of some tree and here well up from the ground lay their white eggs. These usually number two in Florida, although farther north four are frequently found.

Photo by H. K. Job Courtesy of Outing Pub. Co.

YOUNG BARRED OWL

Mr. Job found it in a hollow tree

Drawing by R. I. Brasher

BARRED OWL (¼ nat. size)

The most proficient hooter among the Owls

"The egg of a Barred Owl in the nest of a Red-shouldered Hawk has twice been found by Dr. Louis Bennet Bishop; both times in the same piece of woodland, which had been reduced from an extensive tract by wood-choppers, thus leaving few suitable nesting-places for large birds. One contained three eggs of the Hawk and one of the Barred Owl, with the Owl on the nest; the other contained two eggs of the Hawk and one of the Barred Owl, with the Red-shouldered Hawk on the nest. As the Hawk's eggs were in both instances further advanced in incubation this species was probably the original owner of

both nests." (Reported in *Birds of Connecticut.*)

The food consists of such animal matter as they find it most easy to obtain. Dr. A. K. Fisher, who has studied much about the food of Owls, states that of a large number of stomachs examined fully 50 per cent. of those that had recently received food contained mice. These birds also eat frogs, lizards, crawfish, spiders, and various insects. Now and then one catches a domestic fowl that has had the temerity to leave the shelter of the hen-house and go to roost in some tree. Small birds are also taken at times. This is probably the reason why all wild birds have such a dislike for an Owl, and one of the many interesting sights of the woodland is to watch a band of Blue Jays leading a mob of feathered friends in an attack on a sleepy sun-dazed, and altogether discomfited Barred Owl. T. Gilbert Pearson.

The Florida, or Allen's, Barred Owl (*Strix varia alleni*) is limited to the coast strip of the South Atlantic and Gulf States from South Carolina to Florida and Texas. Its coloration is similar to the type species but its toes are wholly naked except a strip on the outer side of the middle toe.

The Texas Barred Owl (*Strix varia albogilva*) is very much more limited in its geographical distribution than the Florida; it is found only in the mesquite area of middle southern Texas. Like the Florida it has the toes without feathers, but its general color is much paler — the upper parts more conspicuously barred, the bars nearly pure white; the tail-bands, broader, whiter, and more sharply defined; stripes on under parts narrower and a lighter brown and the buff, decidedly paler; legs much paler buffy or buffy-white and much less distinctly mottled, sometimes immaculate; the bill and feet are much larger.

The Spotted Owl (*Strix occidentalis occidentalis*) and its variant the Northern Spotted Owl (*Strix occidentalis caurina*) are the western representatives of the Barred Owl — the Spotted Owl is often called the Western Barred Owl. They are smaller than the eastern Owl and have the bars of the upper parts and the stripes of the under parts replaced with spots. The colors of the Spotted Owl are much the same as those of the Barred Owl; but the Northern Spotted Owl is decidedly darker, the brown being darker in shade and more extended in area, and the amount of white being correspondingly reduced. The Spotted Owl occurs in the mountains of southern California, Arizona, New Mexico, and southern Colorado south to northern Lower California and northwestern Mexico. The Northern Spotted Owl is found in the Pacific coast district of British Columbia, Washington, Oregon, and northern California.

GREAT GRAY OWL

Scotiaptex nebulosa nebulosa (*J. R. Forster*)

A. O. U. Number 370 See Color Plate 54

Other Name.— Spectral Owl.

General Description.— Length, 30 inches; spread of wings, 60 inches. Plumage, grayish-brown, darker and waved above, lighter and streaked below.

Color.— Adults: General color of upper parts, dusky grayish-brown or sooty, broken by transverse mottlings (mostly on edges of feathers) of grayish-white, the uniformly sooty centers of the feathers producing an effect of irregular dusky stripes, most conspicuous on back and shoulders; the front parts with edges of feathers more regularly barred, the mottling more profuse on rump and upper tail-coverts, producing a more grayish appearance; outer webs of wing-coverts variegated by whitish mottlings; primary coverts with very indistinct bands of paler brown; secondaries crossed by about nine bands (one terminal, three concealed by greater coverts) of pale grayish-brown, fading into paler (sometimes whitish) on edges of outer webs; primaries crossed by nine transverse series of square spots of mottled pale brownish-gray, on outer webs, those nearer the tips indistinct, except the terminal crescentic bar; inner secondaries and middle tail-feathers with coarse mottling or marbling of dusky-brown or sooty and grayish-white, the markings usually with a tendency to form irregular, broken bars; rest of tail, dusky crossed by about nine paler bands, these merely marked off by a narrow line or edging of whitish or pale brownish-gray inclosing a grayish-brown, sometimes slightly mottled, space, though toward base of the tail-feathers the mottling is more confused and the bands confused or broken up; ground color of under parts, grayish-white, each feather of neck, chest, breast, and abdomen with a broad, irregularly saw-toothed center stripe of dusky-brown or sooty; sides, flanks, anal region, and under tail-coverts, narrowly banded or barred with sooty-

brown and grayish-white, the legs with narrower, more irregular bars; "eyebrows," lores and chin, grayish-white, with a dusky space immediately in front of eye; face, grayish-white with distinct concentric semicircular bars of dusky-brown; facial circle, dark brown passing into white on foreneck, where interrupted by a spot of brownish-black on throat; *bill, light dull yellow*; *iris, lemon-yellow.* DOWNY YOUNG: Buffy-white, the down on the hindneck, back, shoulders, and wings, dark sooty-brown basally, the tips pale dull buff or pale brownish-buffy.

Nest and Eggs.— NEST: In conifers, usually at a good height; constructed of sticks, twigs, and moss and warmly lined with feathers. EGGS: 2 to 4, white and small for size of the bird.

Distribution.— Northern North America; breeding from tree limit in Alaska and northwestern Mackenzie southward to northern British Columbia, central Alberta, northwestern Idaho, northern Manitoba, and northern Ontario; in winter migrating southward to Rhode Island, Connecticut, New Jersey, Pennsylvania, northern Ohio, northern Illinois, Minnesota, North Dakota, Wyoming, Colorado, Oregon, and northern California.

The Great Gray Owl has received from the scientists a name with a very appropriate and poetical interpretation; *scotiaptex* is from two Greek words which mean "the Eagle-Owl of darkness"; *nebulosa* is Latin and means "cloudy" or "gray."

This big and powerful Owl is forced to do much of its hunting in daylight for the very good reason that in a large area of its natural range there is no true night. Occasionally it strays into the United States. Elon H. Eaton states that "in the Adirondacks [N. Y.] it is probably more common as a winter visitor than is supposed, but throughout the remainder of the State is only of rare and irregular occurrence." Its decided preference, however, is evidently for the thick forest of the northland, "in which," Dr. Fisher says, "it dwells doubtless to the very limit of the trees."

According to Dr. William Healey Dall it is a stupid bird and may sometimes be caught in the hands. Its diet consists chiefly of small mammals (hares, meadow mice, and squirrels) and Ptarmigan and smaller birds. Its cry resembles that of the Screech Owl.

The Great Gray Owl exceeds the Great Horned Owl in measurements, but its weight is seldom more than that of the Barred Owl. Its plumage is unusually thick and fluffy and makes the bird appear a great deal heavier than it really is.

The Lapp Owl (*Scotiaptex nebulosa lapponica*) is an Old World variant of the Great Gray Owl which occasionally strays into Alaska. It is lighter colored than the Great Gray. It is considered very rare even within its natural range in the upper portions of forest belt of the Arctic regions of Europe and Asia.

RICHARDSON'S OWL

Cryptoglaux funerea richardsoni (*Bonaparte*)

A. O. U. Number 371 See Color Plate 55

Other Names.— American Sparrow Owl; Sparrow Owl; Arctic Saw-whet Owl.

General Description.— Length, 11 inches; spread of wings, 24 inches. Color above, brown, spotted with white; below, white, spotted with dark.

Color.— ADULTS: General color of upper parts, deep brown; crown, thickly spotted with white, the spots of roundish form; hindneck with very large, partly concealed, irregularly heart-shaped or variously formed spots of white; shoulders with large, partly concealed spots of white, the exterior ones with outer webs mostly white, margined terminally with brown; wing-coverts near edge of wing and some of the greater coverts with large roundish spots of white; rear half of secondaries crossed by two rows of small white spots (on edge of outer web); outer webs of primaries with roundish white spots, these growing smaller on innermost quills; tail crossed by four or five transverse rows of white spots, these not touching shaft on either web; face, including "eyebrows," grayish-white, the portion immediately above upper eyelid and in front of eye, dark sooty-brown or blackish, the sides of head intermixed with dusky; area above and behind ears uniform dark brown, the latter dotted on rear portion with white; sides of neck, mostly white, some of the feathers tipped with brown; chin, cheeks, and space below ears, immaculate white; across middle of throat, a broken band of mixed brown and white, the former predominating; ground color of under parts, white, slightly tinged, in places, with pale buff, *the breast*

(except in center) *with large spots of brown, the sides and flanks, broadly striped with the same, the under tail-coverts with narrower stripes; legs, buff, usually clouded with brown;* under wing-coverts, buffy white, spotted or streaked with brown; under surface of wings, grayish-brown spotted with white, the spots larger and more roundish on secondaries and inner primaries, narrower and oblique on longer and outermost primaries; bill, horn color; iris, lemon-yellow. YOUNG: Wing- and tail-feathers (only) as in adults; rest of upper parts plain deep sooty-brown, the ear-region and part of the region back of the eye, uniform sooty-black; "eyebrows," lores, and corners of the mouth, dull white, the feathers with black shafts; under parts, plain vandyke-brown, intermixed on rear portions with dull buffy.

Nest and Eggs.— NEST: In hollow trees, or among branches of trees, or in bushes. EGGS: 2 to 7, white, unspotted.

Distribution.—Northern North America; breeding from the limit of tree growth in Alaska, Yukon, and Mackenzie south to northern British Columbia, northern Alberta, northern Manitoba, Nova Scotia, and Magdalen Islands; south in winter (regularly or casually) to Massachusetts, Rhode Island, Pennsylvania, southern Ontario, northern Illinois, Wisconsin, Minnesota, Colorado, northwestern Idaho, southern British Columbia, Washington, and eastern Oregon.

Richardson's Owl is not only nocturnal in its habits, but apparently is made almost completely blind by the sunlight, for, according to Dr. Fisher, "many specimens have been captured alive by persons walking up and taking them in their hands. On this account the Eskimos in Alaska have given it the name of 'the blind one.'"

Dr. Merriam describes the call of this Owl as a "low liquid note that resembles the sound produced by water dropping from a height;" hence the Montagnais Indians call it *phillip-pile-tshch,* which means "water-dripping owl." This name, indeed, has more than mere physical significance for the Indians who use it. Their legend is that once upon a time the largest Owl in the world, who was very proud of his great voice, tried to imitate the voice of the waterfall and to drown out its roar. But the impertinence of this ambition so angered the Great Spirit that he humiliated the huge bird by transforming him to a pygmy and changing his voice to the feeble notes which resemble the slow dripping of water.

GEORGE GLADDEN.

SAW-WHET OWL

Cryptoglaux acadica acadica (*Gmelin*)

A. O. U. Number 372 See Color Plate 55

Other Names.— Acadian Owl; White-fronted Owl; Kirtland's Owl; Sparrow Owl.

General Description.— Length, 8 inches; spread of wings, 18 inches. Color above, brown, spotted with white; below, white, spotted with dark.

Color.— ADULTS: General color of upper parts, nearly vandyke brown; the crown, narrowly streaked with white, the streaks sometimes restricted to forehead and sides of crown; lower hindneck with large, mostly triangular, concealed spots of white; shoulders with outer webs mostly white, margined terminally with brown; outer larger wing-coverts with a few spots of white; outer webs of outer primaries, spotted along edge with white; tail, crossed by two or three interrupted narrow bands of white and margined at tip with the same, the transverse spots forming the bands not touching shaft on either web; lores, space above and around eye, and chin, dull white, the eye margined above and in front with dusky, this in front of eye sometimes spreading over greater portion of lores; sides of head, dull buffy white to cinnamon-buff, broadly streaked with brown; across middle of throat and thence, on each side, to the ear ruff, a band of brown or chestnut-brown spots or streaks, this sometimes advancing in front middle portion, forming a patch on upper throat; ear-ruff, streaked with brown and white, the former predominating; rest of under parts, white tinged or suffused with pale buff, broadly striped or longitudinally spotted with chestnut-brown; under tail-coverts, immaculate white or, more rarely, with small and indistinct spots or streaks of pale brown; *legs, pale buff* to cinnamon-buff, the toes, paler (dull white or buffy white); under wing-coverts, buffy white to light cinnamon-buff, becoming white along edge of wing; under primary coverts white, broadly and abruptly tipped with grayish brown; under surface of wings, grayish-brown, the inner webs of secondaries and primaries with large spots of white, the outer primaries sometimes with a few small, narrow, oblique white spots, sometimes immaculate; bill, black; iris, lemon-yellow; naked portion of toes, pale dull yellowish, YOUNG: Wing- and tail-feathers (only) as in adults; "eyebrows" and forward portion of forehead, white, in strong contrast with the uniformly blackish-brown or (more rarely) lighter brown of ear region; rest of crown, together with upper parts (except wing- and tail-feathers), plain, deep brown; chin and sides of throat, dull white; throat, chest, and breast, plain

brown (lighter than upper parts); rest of under parts, plain tawny-buff or cinnamon-buff.

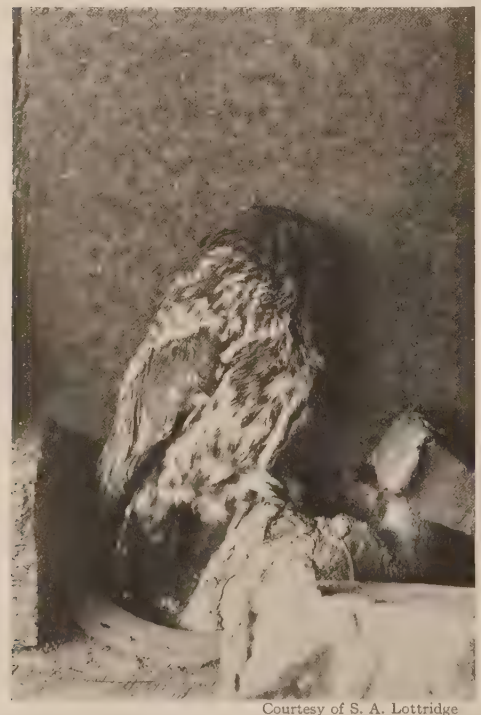
Nest and Eggs.— NEST: In a hollow tree or stump, or in deserted Woodpecker and squirrel holes. EGGS: 3 to 6, white.

Distribution.—Northern North America; breeding from Nova Scotia and New Brunswick westward through Quebec, Ontario, Manitoba, and Alberta to British Columbia, and extreme southern Alaska, southward to Massachusetts, Pennsylvania, mountains of Maryland, northern Indiana, northern Illinois, southern Nebraska, Colorado, New Mexico, central Arizona, higher Sierra Nevada of California, and Oregon; in winter migrating irregularly (according to severity of the season) southward to Virginia, southern Ohio, southern California, etc., casually to North Carolina, South Carolina, Georgia and Louisiana; casual or accidental in Mexico and Guatemala.

If sound sleeping be a sign of a clear conscience, the Saw-whet Owl must have very few sins on its mind, for so deep is its slumber, huddled up in a spruce thicket or some other dense foliage, that frequently even clumsy man captures it alive. A more tragic result is the capture of the sleeper by its arch-enemy, the Barred Owl, or by some other carnivorous prowler on noiseless wing or padded foot. Doubtless the number of these captures would become large enough in time to make the bird rare indeed, but for the fact that it often selects as a bed-chamber an old Woodpecker's nest, or a hollow tree, where it is comparatively safe from most of its enemies during the daylight hours; at night its senses are so alert that it can generally elude them.

Courtesy of S. A. Lottridge

EGGS OF THE SAW-WHET OWL



Courtesy of S. A. Lottridge

SAW-WHET OWL

Photographed in a wood-house on the Orange Mountains, New Jersey

The Saw-whet is a non-migratory species, but is a good deal of a wanderer nevertheless, with the result that a locality which has known it well one year may see nothing whatever of it for several years thereafter. These wanderings are chiefly in search of food and occur especially during the fall and winter months. The bird's flight is singularly like that of the Woodcock; so much like it, in fact, that Dr. Fisher, who made a special and very careful study of American Owls, once shot a flying Saw-whet supposing it to be a Woodcock, and did not discover his mistake until his dog pointed the dead bird.

This Owl's cry, most frequently heard during March and April, has a peculiar scraping or rasping quality which suggests the sound made by filing a large-toothed saw; and hence its popular name.

A grayer variety of this owl, found on Queen Charlotte Island and in British Columbia south to the Puget Sound region, has been named the Northwestern Saw-whet Owl (*Cryptoglaux acadica scotæa*).

Courtesy of the New York State Museum

HAWK OWL *Surnia ulula caparoch* (Müller)

SAW-WHET OWL
Cryptoglaux acadica acadica (Gmelin)

RICHARDSON'S OWL
Cryptoglaux funerea richardsoni (Bonaparte)

All ½ nat. size

SCREECH OWL

Otus asio asio (*Linnæus*)

A. O. U. Number 373 See Color Plate 56

Other Names.— Little Horned Owl; Gray Owl; Red Owl; Little Dukelet; Mottled Owl; Shivering Owl.

General Description.— Length, 10 inches; spread of wings, 22 inches. Dichromatic; in gray phase, brownish-gray dappled; in red phase, pattern the same but color chestnut-red. Ear-tufts, large and conspicuous; four or five outer primaries notched or cut away on inner webs; toes scantily feathered toward their tips.

Color.— GRAY PHASE — ADULTS: Above, brownish-gray finely mottled and streaked with black or dusky, each feather with an irregular center streak, or chain of small spots connected along shaft, of the same; inner webs of ear tufts coarsely mottled with grayish-white, brownish-white, or pale buffy; shoulders, mostly dull white to light buff, tipped and narrowly margined with blackish; across upper nape an indication of a lighter colored band, in the form of irregular grayish-white or buffy spots, and across lower hindneck often another of buffy (mostly concealed) spots; secondaries, crossed by several narrow bands of paler buffy-grayish or pale dull buffy, each enclosing an irregular dusky bar or transverse spot of dusky, the general color, however, so broken by mottlings that the bands are sometimes indistinct; outer webs of outermost middle and greater coverts, with a large spot of white or pale buffy on or near the tip; outer webs of inner primaries, with square spots of lighter cinnamon, these becoming larger and paler on the three or four longest primaries; tail, crossed by seven or eight irregular, broken, narrow bands of lighter grayish-brown; face, dull grayish-white, with an area of deep, mottled or streaked, brown immediately above eye; "eyebrows," sides of head, and below eyes, narrowly barred with dusky, the feathers of lores with conspicuously black shafts and bristly tips; facial rim, mostly black, especially from behind ears to sides of throat; chin dull white; throat, dull white suffused with pale cinnamon-buff, narrowly barred and streaked with black; a small area of immaculate dull white in center of foreneck; center line of abdomen, together with anal region, immaculate buffy white; rest of under parts, white (sometimes faintly tinged with pale buff), broken by a rather dense narrow irregular barring of black and broad center streaks of the same, these connected or confluent with the bars, and on sides of breast enlarged into conspicuous spots, which are often edged with light rusty; frequently, on sides and flanks, pairs of the black bars enclose a space of pale brown; legs light cinnamon-buff, fading into dull whitish on lower and rear portions of tarsi, the thighs nearly immaculate but leg-plumes heavily barred with dark brown, at least on upper portion; longer under tail-coverts with rear portion barred or spotted with black and light brown; bill, pale dull greenish-blue; iris, bright lemon-yellow, the eyelids jet-black; toes and basal portion of claws, yellowish-gray, the terminal portion of claws, dusky. YOUNG: Wings and tail as in adults; upper parts, deep grayish-brown indistinctly and rather broadly barred with dusky, many of the feathers tipped with dull white; under parts, dull white broadly barred with grayish dusky; no streaks on upper or under parts. RUFESCENT PHASE — ADULTS: General pattern of coloration much as in the gray phase, but the gray or brown everywhere replaced by bright chestnut-rufous, the upper parts without the blackish; streaks narrower and linear; face, plain light cinnamon-rufous, the lores and over eye, whitish; under parts with pattern less intricate, the blackish or dusky bars of the gray phase replaced by transverse spots of cinnamon-rufous. YOUNG: Similar to young of the gray phase, but the grayish or grayish-brown markings rufescent.

Nest and Eggs.— NEST: In a deserted Woodpecker hole, in natural hollow in a tree or stump, in outbuildings, or in boxes placed in trees for their use. EGGS: 4 or 5, white, laid on a few sticks, bits of grass, leaves, and feathers.

Distribution.— Eastern North America from Minnesota, Ontario, and New Brunswick south to northeastern Texas and Georgia, and west to about the 100th meridian; accidental in England.

One wonders how the man who named this bird the "Screech" Owl, would feel about a real screech, and how he would describe it. For the bird's characteristic cry is a singularly mournful and plaintive little wail, with never the slightest suggestion of a screech about it. Any term which would have denoted lament, apprehension, and incidentally a severe chill, would have been appropriate; in fact the name, "Shivering" Owl, by which the bird is commonly known in the South, has the advantage of being doubly significant, since the shivering note gives superstitious folk the "shivers" also.

From the naturalist's point of view, the most remarkable peculiarity of this Owl is what is technically called its "dichromatism," which means its tendency to develop two very distinct plumage phases, a red and a gray. There is no satisfactory explanation of this curious idiosyncrasy. As William Dutcher says, "a bird of one color may be mated with a bird of another color, and all of their young may be of one color, either red or gray, or the parents may be of one color and the young of mixed colors; hence this is often called the Mottled Owl. The only other Owl that might possibly be confounded with it is the Saw-whet [Acadian], which lacks ear-tufts, is brown, and does not have black wing-shafts." One instance is reported in which a captive gray Screech Owl was fed liver exclusively, and its

plumage changed to red; but, as this was only a single experiment, it cannot be considered conclusive proof that the color change was due to the diet.

Courtesy of Am. Mus. Nat. Hist.

SCREECH OWL

In the South this bird is better known as the Shivering Owl

Another interesting peculiarity of the bird is that apparently the male and female mate for life, or at least retain that relationship for several years. This is one of the comparatively few instances of monogamy in the bird world. Polygamy is more common, but with the great majority of birds the association of the male and the female is purely a temporary affair, and in many instances the male deserts the female before the young are fully able to shift for themselves. A pair of Screech Owls may, however, continue their relationship until it is broken by the death of one or the other; and as the species is not migratory, it may even happen that the same pair will continue to use the same nest, in winter as well as summer, until they are driven away, in which event they are quite likely to resume housekeeping in the same neighborhood.

It remains to be said that the almost invariable rule of extreme cleanliness in the care of their nests or nesting places, characteristic of most American wild birds, is not generally observed by these Owls, whose habitations are often exceedingly filthy. GEORGE GLADDEN.

Scattered over North America are eight variants of the Screech Owl. The Florida Screech Owl (*Otus asio floridanus*) occurs in the coast districts of the South Atlantic and Gulf States from South Carolina to Florida and Texas; it is smaller and darker, with the under parts more densely or heavily penciled, in both phases, than the type species.

The Texas, or McCally's, Screech Owl (*Otus asio mccalli*) is limited to the lower Rio Grande valley, both in Texas and in Mexico; it is larger than the Florida Screech Owl but smaller than the common Screech Owl and paler than either; in the gray phase it is much more coarsely mottled above than in any other form of the species.

The California, or Bendire's, Screech Owl (*Otus asio bendirei*) is similar to the gray phase of the eastern Screech Owl, but the other parts are more tinged with grayish and the darker pencilings are finer and more generally distributed, nearly, if not quite, obliterating the immaculate white throat and abdominal area which are always present in the type species. There is no rufous phase in this form. Its distribution is limited to southwestern Oregon and California.

Photo by H. K. Job Courtesy of Outing Pub. Co.

YOUNG SCREECH OWL

In position of defense

SCREECH OWL *Otus asio asio* (Linnaeus)
Gray and red phases

SHORT-EARED OWL *Asio flammeus* (Pontoppidan)

All ½ nat. size

The Rocky Mountain Screech Owl (*Otus asio Maxwelliæ*) was named in honor of Mrs. M. A. Maxwell of Boulder, Colorado, a noted taxidermist and hunter. It is found in the foothills and on the adjacent plains of the eastern Rocky Mountains from southeastern Montana to central Colorado. It is conspicuously lighter in color than any other form, with the white purer and more extended and the colored parts paler.

MacFarlane's Screech Owl (*Otus asio macfarlanei*) is larger and very much darker than the Rocky Mountain; in coloration it is similar to the California but is also larger than that form. It occurs from the interior of British Columbia south to eastern Washington, Oregon, and western Montana.

Kennicott's Screech Owl (*Otus asio kennicotti*) is large, like MacFarlane's, but its coloration is much darker and browner, the general tone of the upper parts inclining to tawny-brown, with the lighter markings brownish buff or paler cinnamon, the under parts suffused with pale cinnamon, and the legs light tawny; the gray phase is relatively rare. This form is found in the northwest coast region from Oregon to Sitka.

Aiken's Screech Owl (*Otus asio aikeni*) is smaller and much darker than the Rocky Mountain; it is distributed over the foothills and plains of east-central Colorado, south to central New Mexico and northeastern Arizona, and east to central Texas.

The Mexican, or Arizona, Screech Owl (*Otus asio cineraceus*) is similar to the Aiken's Screech Owl, but it is more delicately penciled both above and below, the pencilings on the under parts averaging denser and more numerous; it is found in southeastern California, northern Lower California, Arizona, New Mexico, and northwestern Mexico.

A species closely allied to the Screech Owls is the Spotted Screech Owl (*Otus trichopsis*). It is somewhat like the Texas and Mexican Screech Owls, but smaller; the coloration is much darker, with coarser mottling on the upper parts; the lower hindneck is crossed by a collar of white spots. It occurs from southern Arizona south to Guatemala.

Photograph by A. A. Allen

SCREECH OWL

Brooding her young in the hole of a dead maple

Another related species is the Flammulated Screech Owl (*Otus flammeolus flammeolus*) and its variant form, the Dwarf, or Idaho, Screech Owl (*Otus flammeolus idahoensis*). In these two Owls the toes are entirely naked, the ear-tufts, short (almost rudimentary), the upper parts, grayish (cinnamon-brown in red phase), finely mottled and marked with blackish, the facial circle, bright cinnamon to deep brown. The Flammulated Screech Owl is found in Arizona and northern Colorado south to central

Mexico and the highlands of Guatemala; the Dwarf Screech Owl occurs in southern British Columbia, eastern Washington, and Idaho south to San Bernardino Mountains, California.

"The little Screech Owl is well known throughout the greater part of the United States. With the exception of the Burrowing Owl, it feeds more extensively on insects than any of the other Owls. It is also a diligent mouser, and feeds more or less on crawfish, frogs, toads, scorpions, lizards, and fish. Of 254 stomachs examined, birds were found in about 15 per cent. Among insects, grasshoppers, crickets, beetles, and cutworms are most often eaten. As many as fifty grasshoppers have been found in one stomach, eighteen May beetles in another, and thirteen cutworms in a third. During the warmer parts of the year it is exceptional to find a stomach not well filled with insect remains. Meadow mice, white-footed mice, and house mice are the mammals most often taken, while chipmunks, wood rats, flying squirrels, and moles are less frequently found. The Screech Owl is fond of fish and catches many, especially in winter, when it watches near the breathing holes on the ice, and seizes the luckless fish which comes to the surface. Most of the birds destroyed by this Owl are killed either in severe winter weather or during the breeding season, when it has hard work to feed its young. As nearly three-fourths of the Owl's food consists of injurious mammals and insects, and only about one-seventh of birds (a large proportion of which are destructive English Sparrows), there is no question that this little Owl should be carefully protected." (Fisher.)

GREAT HORNED OWL

Bubo virginianus virginianus (*Gmelin*)

A. O. U. Number 375 See Color Plate 57

Other Names.— Big Hoot Owl; Cat Owl; Virginia Owl; Virginia Horned Owl.

General Description.— Length, 24 inches; spread of wings, 60 inches. Color above, sooty-brown or dusky, mottled with grayish-white; below, whitish, barred with dark. Ear-tufts very conspicuous, about 2 inches in length; toes fully feathered; 3 or 4 outer primaries notched or cut away on inner webs.

Color.— Adults: Plumage in general, tawny basally, this partially exposed on crown and hindneck, on shoulders, rump, and sides of breast, sometimes on other portions of the under parts; general color of upper parts, dark sooty-brown or dusky, much broken by coarse transverse mottling of grayish-white, the dusky greatly predominating on crown and hindneck, where forming broad ragged or coarsely and irregular saw-toothed longitudinal stripes which become blended on forehead; shoulders and some of the middle and greater wing-coverts with inconspicuous irregular spots or blotches of whitish; secondaries more minutely mottled (producing a more grayish effect), and crossed by about five to eight bands of mottled dusky; primary coverts, darker, crossed by three of four bands of blackish; primaries with ground color more ochraceous or buffy, finely mottled or penciled, and crossed by six to nine transverse series of square spots of dusky; ground color of tail, light tawny, transversely mottled with dusky, more whitish terminally, and crossed by six or seven bands of mottled dusky, these about equal in width to the paler interspaces and bands broken or sometimes even quite obliterated on middle tail-feathers where the darker markings have an oblique or, sometimes, even longitudinal tendency; ear-tufts with outer webs black, their inner webs mostly ochraceous; "eyebrows," dull whitish, the feathers with blackish shafts; face, dingy ochraceous or dull tawny, passing into dull whitish around eyes; a crescentic mark of black bordering upper eyelid and confluent with black of ear-tufts; facial circle, black, except across throat; a conspicuous, crescentic area of immaculate white across foreneck, the feathers white to extreme base; rest of under parts with white predominating, but tawny or ochraceous prevalent on sides of breast and showing as the base color wherever the feathers are disarranged; sides of chest, breast, and abdomen, sides, and flanks, with numerous sharply defined transverse bars of brownish black, these narrower and less sharply defined on front, the center of upper breast immaculate white; a series of large spots or blotches of black on chest, below the white collar; under tail-coverts with bars farther apart than on other under parts; legs and toes, dull tawny to pale buff, usually immaculate or nearly so, more rarely flecked or spotted with dusky; bill, dull slate-black or blackish-slate; iris, bright lemon-chrome yellow; bare portion of toes, light brownish-gray or ashy; claws, horn color, passing into black terminally. Young: Wings and tail as in adults; downy plumage of head, neck, and body, ochraceous or buff, relieved by detached, rather distant, bars of black.

Nest and Eggs.— Nest: Generally, in a deserted Hawk's, Crow's, Eagle's, Osprey's, or Caracara's nest or (in some parts of its range) in a cave, on a ledge, or in a hollow tree; constructed of twigs, weed stalks, roots, and feathers when in an old nest, or eggs deposited on the bare ground amidst a collection of old bones, skulls, fur, and feathers of quadrupeds and birds. Eggs: 2 or 3, white.

Distribution.— Eastern North America from Ontario, Quebec, New Brunswick, and Newfoundland south to the Gulf coast and Florida, west to Wisconsin, eastern Minnesota, Iowa, and eastern Texas.

"Tiger of the Air" is the term which has been applied to this great Owl, and fitly, too, it must be admitted, for the big bird undeniably is courageous, powerful, and bloodthirsty. That he is highly destructive must also be conceded, for it has been demonstrated beyond question of a doubt not only that he is bold, persistent, and generally successful in his raids upon domestic poultry of all kinds, but that he is highly skillful and deadly in his pursuit of game birds, song birds, rabbits, and squirrels.

The tiger comparison applies well to the Owl's manner of hunting, for the sweep of his great wings in the silent air is as noiseless as the tread of the big cat's padded feet upon the soft earth. Through the woods and over the meadows he glides as silently as a shadow, and to the unwatchful rabbit or the slumbering Partridge that shadow is the shadow of certain and sudden death. For such creatures the Owl's lightning-like swoop, and the murderous clutch of his great talons, are as pitiless and as inescapable as the spring of the tiger upon the helpless lamb.

To the poultry-farmer this Owl is a veritable terror; for, once the bird has acquired a preference for a diet of domesticated fowls, and has learned that they are easier to capture than are the wild creatures, nothing short of death is at all likely to deter him. For young Turkeys he is likely to develop an especially strong craving, and one instance is recorded of the loss by a farmer of fifty-nine young Guinea-fowl, taken in a single autumn by the same Owl. In such instances the bird is likely to become fastidious to the extent that he will devour only the brains of his prey, and leave the flesh untouched. Of the mammals he has been known to kill even the woodchuck, and he and other members of his family are apparently the only rapacious birds who frequently dine on the skunk, with the well-known results which, however, evidently do not in the least trouble the Owl.

The bird's breeding habits are peculiar. In the general latitude of Michigan the eggs are laid before the first of March, and many instances are recorded of their being laid as early as the first week in February, or even in the latter part of January, when the winter has been unusually mild. It is by no means uncommon to find an Owl stolidly incubating under a thick blanket of snow. Two eggs are the normal complement, and there is evidence that frequently they are laid with an interval of several days between them, for often a nest is found to contain a partly fledged bird and an unhatched egg. This peculiarity has prompted the dubious inference that the interval between the eggs is deliberately planned, so that the later one may be protected by the fledgling when the mother is away from the nest. It is much more probable that the interval represents natural operations which are imperfect, rather than designed.

Courtesy of Am. Mus. Nat. Hist.

GREAT HORNED OWL (⅛ nat. size)

A bold, persistent, and powerful raider

"Dr. Louis Bennett Bishop and Mr. Herbert K. Job have both noted an unusual habit of the parent birds in apparently destroying the nest when the young become old enough to balance themselves in the fork of the tree, thus removing the conspicuous nest and leaving the bird

well protected by the harmony of its colors with the bark of the tree." (Reported in *Birds of Connecticut.*)

The hooting cry of Owls is perhaps as famous as is the note of any bird. In fact, it is so famous that uninformed or careless listeners apply the term "hoot owl" to any bird who has a

Photo by H. K. Job Courtesy of Outing Pub. Co.

GREAT HORNED OWL

When huddled up on the nest attending to incubation duties its resemblance to a cat is very marked

hooting call. As a result such persons often confuse two or more distinct species, especially the Great Horned Owl and the Barred Owl, though there is a marked difference between the hoots of these two birds, that of the Great Horned being much the stronger and more characteristic. This bird also has a series of yelps, not unlike those of a dog, and a catlike squall, to which may be due one of its popular names, "Cat Owl," though the appearance of the bird's head with its conspicuous ear-tufts is not unlike that of a cat.

The *"oot-too-hoo, hoo-hoo"* call, with the syllables variously divided and differently accented is, however, the characteristic utterance of this remarkable and interesting bird. Sometimes, when heard at a distance, the audible notes, two long ones followed by two short ones, strongly suggest the warning which a locomotive engineer sounds with his whistle when he approaches a crossing. Usually the cry, like that of most Owls and of the night-birds generally, has an uncanny and weird significance, in which are blended distinct suggestions of threat, defiance, and scorn, as befits the fearless and savage nature of this veritable "tiger of the air."

GEORGE GLADDEN.

The name of the genus to which the Great Horned Owl belongs is *Bubo,* which is Latin for Eagle-Owl. This genus has seven other representatives in North America. The Western, or Pallid, Horned Owl (*Bubo virginianus pallescens*) is similar to the Great Horned but smaller and lighter. It is found in western North America (exclusive of the high mountains) from eastern Oregon, Montana, and Minnesota south to southeastern California, Arizona, New Mexico, western Texas, and northeastern Mexico.

The Pacific, or California, Horned Owl (*Bubo virginianus pacificus*) is found in the interior of California, north to south-central Oregon, and east to San Francisco Mountain, western Arizona. It is slightly smaller than the Western Horned Owl, generally darker, the feet more heavily mottled with dusky, and the face usually with more decided tinge of tawny.

The Dwarf Horned Owl (*Bubo virginianus elachistus*) occurs in southern Lower California; it is similar in coloration to the Pacific Horned Owl but much smaller.

The Dusky Horned Owl (*Bubo virginianus saturatus*) is similar to the Pacific Horned Owl but much darker, especially the upper parts; it is found from the interior of Alaska south along the coast to south-central California, and in the Rocky Mountains to Arizona and New Mexico.

The Arctic Horned Owl (*Bubo virginianus subarcticus* or *Bubo virginianus wapacuthu*) is paler than the Western Horned Owl, the upper parts with much more of white and less of black, the under parts less heavily barred, and the feet paler, usually immaculate buff or buffy white.

Courtesy of the New York State Museum

GREAT HORNED OWL *Bubo virginianus virginianus* (Gmelin)
$\frac{3}{4}$ nat. size

It breeds from northwestern Mackenzie and central Keewatin to the southwestern Saskatchewan; in winter it travels southward to Ontario, Wisconsin, northeastern Illinois, North Dakota, Montana, Idaho, and Colorado.

The Labrador Horned Owl (*Bubo virginianus heterocnemis*) is similar to the Dusky Horned Owl; but its bill is larger, its rear under parts lighter, its feet paler and less heavily mottled, and its upper parts usually with less of a tawny admixture. It occurs on the coast of Labrador and Ungava; in winter it is found in Newfoundland, Ontario, and Toronto.

The Saint Michael Horned Owl (*Bubo virginianus algistus*) is larger than the Pacific Horned Owl and with the tawny parts intensified in color. It is found in the coast region of northern Alaska from Bristol Bay and the Yukon delta northward.

As a result of his investigations of the habits of this group of Owls, Dr. A. K. Fisher reports: "The large and handsome Great Horned Owl is found throughout the United States where suitable timber exists for its habitation. It is a voracious bird, and its capacity for good or evil is very great. If the more thickly settled districts where poultry is extensively raised could be passed by, and the bird considered only as it appears in the great West, it would earn a secure place among the beneficial species, for it is an important ally of the ranchman in fighting the hordes of ground squirrels, gophers, prairie dogs, rabbits, and other rodents which infest his fields and ranges. Where mammals are plenty it does not seem to attack poultry or game birds to any considerable extent, but in regions where rabbits and squirrels are scarce, it frequently makes inroads on fowls, especially where they roost in trees. Undoubtedly rabbits are its favorite food, though in some places the common rat is killed in great numbers; we have a record of the remains of over one hundred rats that were found under one nest. The following is a list of the mammals taken from the stomachs examined: Three species of rabbits, cotton rat, two species of pouched gophers, two species of wood rats, chipmunk, two species of grasshopper mice, white-footed mouse, plateau ground squirrel, Harris ground squirrel, musk rat, fox squirrel, five species of meadow mice, one short-tailed shrew, the house mouse, common rat, black bat, red-backed mouse, flying squirrel, shrew, and kangaroo rat. Besides mammals and birds, insects (such as grasshoppers and beetles), scorpions, crawfish, and fish are also taken. The Great Horned Owl does a vast amount of good, and, if farmers would shut up their chickens at night instead of allowing them to roost in trees and other exposed places, the principal damage done by the bird would be prevented."

SNOWY OWL

Nyctea nyctea (*Linnæus*)

A. O. U. Number 376 See Color Plate 54

Other Names.— Great White Owl; Ermine Owl; Harfang; Wapacuthu; Arctic Owl.

General Description.— Length, 24 inches; spread of wings, 60 inches. Color, white with dark spots. Ear-tufts almost or quite lacking; 4 or 5 outer primaries notched or cut away on inner webs near tips; feet densely covered with hair-like feathers, hiding the black claws.

Color.— Adult Male: Entire plumage, pure white, sometimes nearly immaculate but usually broken with transverse spots or bars of clear slaty brown on crown, back, and shoulders, the wing- and tail-feathers with subterminal spots of dusky; under parts, usually marked on abdomen, sides, and flanks with narrow bars of clear slaty brown, but these sometimes wholly absent; bill, black; iris, lemon-yellow; claws, black. Adult Female: Much darker than the adult male, only the face, foreneck, center of breast, and the feet being immaculate, other portions being heavily barred with dark brownish-slate, the crown and hindneck spotted with the same; bill, etc., as in adult male. Young: Uniform dusky brown or deep sooty-grayish, paler on legs and feet.

Nest and Eggs.— Nest: A slight depression on a knoll, lined with some dried grass and a few feathers. Eggs: 3 to 10, generally 5 to 7, white or pale cream.

Distribution.— Northern parts of northern hemisphere; in North America breeding from far within the Arctic Circle southward to northern Ungava, central Keewatin, central Mackenzie, and northern British Columbia; in winter southward to more northern United States, irregularly (according to severity of the season), but sometimes numerously, to Virginia, Illinois, Kansas, Colorado, and mouth of Columbia River, casually or rarely to South Carolina, Louisiana, Texas, and California; accidental in the Bermudas.

The fine, strong, and picturesque Snowy Owl comes to us as a migrant from the northland where it breeds, and where the long days in summer make its habits chiefly diurnal. This fact has been discovered too late by many a Crow engaged with his brethren in the pleasing diversion of mobbing the big white specter sitting on

Drawing by R. I Brasher

SNOWY OWL (⅛ nat. size)

A clever fisherman as well as hunter

a limb motionless, and presumably blind, because obviously an Owl. For, let one of the black tormentors come near enough and the ghost suddenly launches out on strong, silent wings, the great talons strike and close, and there is a Crow who would have been wiser but for the circumstance that he is very dead.

In the regions far to the north, where this Owl breeds and therefore does its most persistent hunting, it preys upon small rodents, Ptarmigans, Ducks and other waterfowl, and, according to Captain Bendire, will kill and devour even the Arctic hare, an animal often twice as heavy as the Owl. It is very fond of fish and is said to be expert at catching them alive. It will also eat dead fish washed up on the shore, when other food is scarce.

So swift is its flight that it is able to overtake even Grouse in flight. Duck hunters are often startled by the sudden descent of the great bird upon their decoys. In its migrations it is believed to be more destructive to game and other useful birds than the Barred Owl, but less so than the Great Horned Owl.

For unknown reasons the winter migrations of the Snowy Owl sometimes amount to veritable invasions. In New York, for example, this phenomenon was observed in the winters of 1876–1877, 1882–1883, 1889–1890, and 1901–1902, when, according to Mr. Eaton, "dozens of specimens were collected in various parts of the State, notably on Long Island and near the shores of Lake Ontario."

Of its economic value Dr. A. K. Fisher says: "On account of its size and strength the Snowy Owl is capable of doing great good in destroying noxious mammals. The stomachs examined were collected between the last of October and March and the contents make a very good showing for the bird. Although a number of water birds were found, a large proportion consisted of mammal remains. One stomach contained fourteen white-footed mice and three meadow mice, and in others as many as five to eight of these little rodents were found. The common rat appeared in a number of stomachs and seems to be considerably sought after. It is a lamentable fact that this useful bird is slaughtered in great numbers whenever it appears within our limits." GEORGE GLADDEN.

AMERICAN HAWK OWL

Surnia ulula caparoch (*Müller*)

A. O. U. Number 377a See Color Plate 55

Other Names.— Day Owl; Canadian Owl; Hudsonian Owl.

General Description.— Length, 17 inches; spread of wings, 34 inches. Color above, dark brown, speckled with white; below, white, barred with brown. No ear-tufts; facial disk, poorly developed, making the face hawk-like; 3 or 4 outer primaries notched on inner webs; *tail, long and rounded;* feet, heavily feathered.

Color.— ADULTS: Plumage above, rich dark brown, darker in front, where passing into black or brownish-

black on hindneck and crown, lighter and more grayish-brown behind, each feather of crown with a central small spot of white, those on forehead more circular, those on back of head more linear, as well as less numerous, the hindneck with larger V-shaped or wedge-shaped spots, streaks, or bars of white; a narrow streak of brownish-black from above middle of eye backward along upper edge of ears, where it bends abruptly downward across terminal portion of the latter; confluent with this at about the middle of its vertical portion is another but broader blackish stripe which passes down side of hindneck, and another passes from back of head down center line of hindneck; between these black stripes a whitish area; back, plain brown; a conspicuous elongated patch of white immediately above wing; rump with sparse, transverse, spots of white, the upper tail-coverts with broader and more regular bars of same, about equal to the brown ones in width; outermost middle and greater wing-coverts with an ovoid spot of white on outer webs; secondaries crossed by about three series of ovoid spots of white (on edges) and very narrowly tipped with white; outermost primary coverts with one or two series of white spots; primaries with about 7 series of white spots, all the primaries margined at tips with white; tail, crossed by seven or eight very narrow bands of white (the last one terminal), these bands becoming less distinct (sometimes obsolete) on lateral feathers; "eyebrow," lores, and face, grayish-white, the grayish appearance caused by black shafts to the feathers, the grayish-white of face continued across lower part of throat, separating a large space of dark brown from an indistinct brown collar across upper chest, this collar confluent with the lower end of the black bands on the head; ground color of under parts, white, everywhere barred with chestnut-brown or burnt-umber, the bars sharply defined, averaging rather more than half as wide as the white interspaces, except on upper chest, where the white is so much in excess as to form a broken patch, below which the brown bars are broader, and somewhat coalesced; on legs and toes the bars narrower, more sparse, and less regular; bill, yellowish; iris, lemon-yellow. YOUNG: Upper parts, dark sooty-brown or sepia, the feathers of crown and hindneck tipped with dull grayish-buff, which forms the predominating color; feathers of shoulders and of the space between indistinctly tipped with dull grayish-buff; lores and sides of head, plain brownish-black, the rest of face, dull whitish; under parts, dull whitish, deeply shaded across chest with dark sooty brownish, the other portions being broadly but rather indistinctly barred with brown, these markings narrower and more confused toward the front and on the legs.

Nest and Eggs.—NEST: In an abandoned Woodpecker hole, natural cavities, sometimes on rocks or stumps, or in old nests of other birds, relined with feathers and moss. EGGS: 3 to 7, white.

Distribution.—Northern North America; breeding northward to limit of trees in Alaska, Yukon, Mackenzie, Keewatin, and Ungava, southward to Labrador; Newfoundland (?), central Alberta, Montana (casually?), and southern British Columbia; winters, regularly, southward as far as Massachusetts, Rhode Island, eastern Pennsylvania, New Jersey, New York, southern Ontario, Ohio, southeastern Indiana, Michigan, southern Wisconsin, northern Illinois, Minnesota, Missouri, Nebraska, and Washington; accidental in Bermuda (?) and in British Isles.

Like the Snowy Owl, the Hawk Owl is a winter visitor to our Northern States from the Arctic regions, where, also like his big white cousin, he has learned to hunt effectively in broad daylight. He is likely to be seen in the latitude of the northern third of Michigan from about the last week of October until about the first of February, when he begins to move toward his northward range, several weeks ahead of the Snowy Owl.

The Hawk Owl is of much less frequent occurrence in its southern range than is the Snowy, but like the latter species it sometimes, and for no apparent reason, appears in unusual numbers. One of these visitations, for example, occurred in northern New England in October and November, 1884, when scores, if not hundreds, of these Owls were shot.

The bird is appropriately named "Hawk" Owl; not only is its appearance Hawk-like but its manner of hunting is similar, in some respects, to that of the Hawks, or at any rate very unlike that of most of the Owls. For, besides its daylight hunting, the bird has the habit of perching conspicuously on a dead stub, or in plain sight at the top of a tree, whence it watches for its prey with true Hawk-like alertness. When frightened from such a perch, it usually swoops downward to about the level of the undergrowth and then flies rapidly to another good observation point, which it reaches by an abrupt upward glide. Its flight, however, is entirely Owl-like in its noiselessness.

Its common note, a shrill cry, is uttered usually when the bird is thus in flight. Its prey includes chiefly mice, squirrels, and birds, hawked for in broad daylight.

The American Hawk Owl, as its name implies, is the American representative of the European Hawk Owl (*Surnia ulula ulula*). The latter is found in the northern parts of the Old World but casually it strays over to Alaska. It is much lighter than the American species, the black and brown areas being lighter and less extended and the white ones more extended. In habits, however, the two are alike.

BURROWING OWL

Speotyto cunicularia hypogæa (*Bonaparte*)

A. O. U. Number 378

Other Names.— Billy Owl; Ground Owl.

General Description.— Length, 9½ inches. Color above, brown spotted with light; below, whitish, barred with brown. Tail, square or slightly rounded, only about half as long as wing; head, relatively small; legs, long; 3 outer primaries with inner webs cut away.

Color.— ADULTS: Above, brown with pale brownish-buff to dull buffy-white spots, these largest on back, shoulders, and wing-coverts, where often roundish, and on hindneck, where mostly longitudinal, smaller on crown, where often intermixed with streaks of the same color; secondaries with the spots arranged in 4 or 5 transverse series, the outer webs of primaries with similar spots, which become larger on longer quills; tail, crossed by 5 or 6 narrow, interrupted bands of pale dull buffy, usually suffused with deeper buff and narrowly tipped with pale buff; *a stripe over eye of dull brownish-white*, the lores and around eye the same color but usually stained with pale brown, the former with shafts of the feathers, black; side of head, brown, indistinctly streaked with paler; chin, cheeks, and lower side of head, immaculate dull white or buffy white, this white area extending upward at rear end behind lower half, or more, of ear region; throat, buff, barred with dark brown, the bars usually most developed (sometimes coalesced) behind, forming a transverse band, which on each side is continued upward behind the whitish area; foreneck and upper center of chest, immaculate buffy white; rest of under parts, pale buff, deeper buff and immaculate on thigh plumes and thighs (the feathering of leg, the anal region, center of lower abdomen, and the under tail-coverts likewise immaculate), elsewhere broadly barred with brown, the brown predominating on chest or upper breast (especially laterally), where the buff is often in form of small, roundish, or sometimes even longitudinal spots; bill, dull light grayish or yellowish; iris, clear lemon-yellow; toes and naked part of leg, dull grayish or horn color. YOUNG: Wings and tail (if developed) as in adults; crown, hindneck, and back, mostly plain light grayish-brown to buffy brown; under parts and upper tail-coverts immaculate buff, the sides of chest (sometimes whole of upper chest), shaded with brown; throat band, uniform brown.

Nest and Eggs.— EGGS: Deposited from 5 to 10 feet from entrance of abandoned prairie-dog, skunk, fox, or badger burrow, in an enlarged chamber, upon a collection of weed stalks, dried broken bits of horse or cow-dung, bits of skin, or any convenient material; 5 to 11, usually 5 to 7, white.

Distribution.— Unforested portions of western United States and southwestern Canada, from Pacific coast to western Minnesota, South Dakota, Nebraska, middle Kansas, Texas, and southeastern Louisiana; north to Washington (casual), southern British Columbia, southwestern Saskatchewan (breeding), and western Manitoba; southward through Lower California to Cape San Lucas and through Mexico to Guatemala; reappearing in western Panama; accidental in New York City and Newburyport, Massachusetts (escaped from captivity?).

Courtesy of S. A. Lottridge

FLORIDA BURROWING OWL

Contrary to the usual Owl custom the Burrowing Owl is diurnal in its habits, and evidently can see in the bright noonday glare quite as well as any of our familiar song birds. It is very active and exceedingly odd in many of its movements. Frequently on the western plains or deserts I have come across one of them standing at the mouth of its burrow or perched on a sagebush or fence-stake and have been greeted with a series of bows so profound and deferential as to be most disconcerting.

The nest is always made in a hole in the ground. A fox den, a badger burrow, or a prairie-dog hole, deserted by the original owners, make a suitable abode for the Burrowing Owl. Where these are not convenient and the soil is not too hard for its efforts, the Owl digs its own burrow. Sometimes one may come across a solitary pair far from any others of their kind, and again several pairs will be found inhabiting the same locality. Five to seven eggs are laid. These are pure white, as if Nature did not feel called upon to distribute her coloring matter on eggs that birds insist on hiding in the blackness of an underground chamber.

These Owls appear to eat almost anything they can lay their claws on. Ground squirrels, snakes,

lizards, and grasshoppers all fall beneath their attacks. They are known to catch birds — even such large species as the Nighthawk succumb to their ferocity.

On the palmetto prairies of the south Florida mainland, as well as on some of the islands along the coast, is found the Florida Burrowing Owl (*Speotyto cunicularia floridana*) which is very closely related to the western bird of the same name. In *The Auk* for January, 1892, S. N. Rhoads tells of his experience of visiting a nesting colony that was three miles long and contained several hundred pairs of "Ground Owls," as they are locally called. Here in the loose sand it was easy for the birds to make their own nesting burrows. These ran along so close under the grass roots that grazing cattle often broke holes through from the top. The burrows were from four to seven feet in length with an enlarged oven-shaped pocket at the end. The nesting material consisted of pieces of dry cow-droppings and fragments of turf among which the eggs were mixed more or less indiscriminately.

The old birds it seemed were kept very busy gathering food for their offspring. Of the appetite of the young he writes: "The voracity of the young is phenomenal. I kept several, of different ages, in a tin box for several days. Besides eating everything, fresh or putrid, that was offered, they attacked and devoured each other. I was forced to kill the three remaining cannibals to preserve them."

T. Gilbert Pearson.

PYGMY OWL

Glaucidium gnoma gnoma *Wagler*

A. O. U. Number 379

Other Name.— Gnome Owl.

General Description.— Length, 6½ inches. Dichromatic; in grayish-brown phase, upper parts grayish-brown spotted with light and under parts white streaked with dark; in rufescent phase, upper parts much browner with the spots cinnamon. No ear-tufts; tips of outer primaries narrow.

Color.— Grayish-brown Phase: General color of upper parts, grayish brown, the crown and hindneck with numerous irregular but mostly roundish small spots of pale dull buff; across lower hindneck an interrupted collar of white and immediately below this another of black followed by large, mostly concealed, spots of pale tawny; back, shoulders, wing-coverts, rump, and upper tail-coverts with minute irregular (often V-shaped) spots or bars of pale buffy brownish, buffy, or whitish, these markings mostly concealed; outer shoulder-feathers with large spots of buffy or buffy-white on both webs, the spots largest, however, on outer webs; outermost middle and greater wing-coverts with larger spots of white; primary coverts, plain dark brown, darker terminally, their inner webs, however, spotted with white; wings, dusky grayish brown, their outer webs with transverse spots or broad bars of paler grayish-brown, these becoming white or partly white on outer secondaries and ends of longer primaries; tail, dark to dusky grayish-brown, crossed by 6 or 7 interrupted bars of white, these much broader on inner webs, and on both webs falling far short of the shaft; "eyebrows" and lores, dull white, the latter with conspicuous black bristly shafts; chin and cheeks, immaculate white; a band of brown across throat; foreneck and middle line of breast and abdomen, immaculate white; sides of chest, brown tinged with tawny, transversely spotted with pale cinnamon-buff, the sides more grayish, irregularly spotted with white; rest of under parts, white broadly streaked with dark brown, the streaks becoming black or brownish black on flanks and next to the immaculate white center area; legs, soiled dull white mottled with grayish-brown; bill, pale grayish-yellow, darker basally; iris, lemon yellow; toes, light yellowish-brown. Rufescent Phase: Similar in pattern of coloration to the grayish-brown phase, but general color of upper parts much browner with the spotting (especially that on crown and hindneck) cinnamon or cinnamon-buff, and with throat-band and sides of breast cinnamon-brown.

Nest and Eggs.— Nest: In hollow stumps, or trees from 8 to 75 feet from the ground, usually in deserted Woodpecker holes, generally in coniferous forests, but the nest in deciduous trees. Eggs: 3 or 4, white or very pale cream.

Distribution.— Western North America from Caribou district, interior of British Columbia, south in mountains to Guatemala and east to eastern Montana, Colorado, and New Mexico.

Dr. Coues gave the Pygmy Owl an excellent character, saying that "it is a very straightforward, ingenuous, unsuspicious little bird, meddling with no affairs but its own, and innocent enough to expect like treatment from others, expectations, however, not often realized"— either in birdland or elsewhere, he might have added.

A physical peculiarity wherein the bird is strangely un-Owl-like is that when it is in flight its wings make a distinct whistling sound, whereas the flight of the remainder of its tribe in this country is as silent as the passing of a shadow. Moreover, like a few other members of its family, it is quite able to do, and does, much of its hunting in broad daylight, even in the bright sunshine, though probably it is most active in the dim light of the evening and early morning. Dr. Fisher corroborates Dr. Coues' statement about the unsuspicious nature of the bird by noting that it responds promptly to an imitation of its call (which resembles the syllables *klook, klook*), and in this way may be decoyed from a considerable distance; and he adds that "it hides in the pines or other thick foliage, where it sits upright near the trunk and is practically invisible to the observer."

Besides not being noiseless this Owl's flight is rather jerky and uneven, suggesting that of the Sparrow Hawk, this being true especially when the bird is hunting insects, which it often catches by pouncing upon them on the ground from low branches or stumps. These dives are executed after the manner of the Shrike, that is, with closed wings, followed by a fluttering upward flight. It is a very courageous bird, and kills and eats other birds as large as the Robin and squirrels or other rodents twice its own size. The Indians are very superstitious about this bird, and believe that killing one will bring terrible misfortunes upon the slayer.

The California Pygmy Owl (*Glaucidium gnoma californicum*) is a browner variety of the Pygmy and is limited to the Pacific coast region from southwestern British Columbia south to Monterey, California. Speaking of this subspecies, Mr. W. L. Finley says (MS.): "We have had one or two cases in which the California Pygmy Owl has killed canaries in cages. One of our wardens killed one of these birds as it was eating a Meadowlark which it had caught; it had evidently caught the bird in broad daylight."

ELF OWL

Micropallas whitneyi (*J. G. Cooper*)

A. O. U. Number 381

Other Name.— Whitney's Owl.

General Description.— Length, 6 inches. Dichromatic; in gray phase, upper parts brownish-gray spotted with yellowish and under parts a mixture of white, gray, and light brown; in brown phase, upper parts nearly snuff-brown. No ear-tufts; tail, square or slightly rounded, less than half as long as wing; tarsus, scantily haired or bristled, not feathered; 4 outer primaries notched on inner webs.

Color.— GRAY PHASE — ADULTS: Above, brownish-gray to grayish-brown, the crown, hindneck, back, shoulders, rump, upper tail-coverts, and lesser wing-coverts with small irregular spots of buff or pale tawny, these larger and deeper pale tawny or cinnamon-buff on forehead; an interrupted narrow collar of white across lower hindneck; outer webs of feathers on shoulders, mostly white, margined terminally with blackish; middle and greater wing-coverts with a large, semi-ovoid spot of white on terminal or subterminal portion of outer web; secondaries crossed by about five series of semi-circular spots of pale cinnamon-buff, these passing into white on outer edge; primary coverts with three series of dull cinnamon-buff spots; outer webs of primaries with about 6 conspicuous spots of cinnamon-buff, these not touching shafts; tail crossed by about 4 or 5 narrow, interrupted bands of pale brownish buffy or buffy and white, these not reaching shaft on either web; "eyebrows," white, the feathers narrowly tipped with black; "face," cinnamon to cinnamon-buff, the last sometimes partly dull rusty whitish; a white cheek spot, margined behind by a blackish bar; throat cinnamon to cinnamon-buff, this extended laterally to behind the black cheek bar, where sometimes barred with blackish; rest of under parts, a confused mixture of white, grayish, and dull light cinnamon or light buffy brown, the white predominating behind, the grayish and cinnamon prevailing forward, the colored areas narrowly and irregularly barred with dusky; under tail-coverts, white, with subterminal irregular spots of pale buffy brown or narrow center streaks of dusky; under wing-coverts, white, suffused with pale buffy brown and irregularly spotted with deep grayish brown, the edge of wing, however, immaculate white; bill, pale horn color with yellowish edges; iris, lemon yellow. YOUNG: Similar to adults but crown nearly immaculate deep brownish-gray, and without any cinnamon-buff on face or throat, or buffy brown on under parts, the latter irregularly marbled or clouded with white and light brownish-gray narrowly barred with darker. BROWN PHASE: Much browner than the grayish (usual) phase, the general color of the upper parts nearly snuff-brown; otherwise not different, the pattern of the coloration being identical.

Nest and Eggs.— NEST: In the giant cactus, an abandoned Woodpecker's hole being almost always utilized, but sometimes in a hollow tree. EGGS: 2 to 5, pure white.

Distribution.— Southern and Lower California, east to southern Texas, south over the tableland of Mexico to Puebla.

Arizona is a land of extremes. We may expect to find gray and brown birds to match the colors of the desert; we also find birds of most brilliant hue. There are also extremes in size. Here in the desert lives the dwarf of all Owls. When we made his acquaintance, we found he was no bigger than an English Sparrow. What a tiny baby in comparison to the Great Horned Owl!

When the late Mr. Herbert Brown, who was a splendid naturalist and outdoor man, asked us to go Owl hunting, we accepted. The next morning, he came early with a team and light wagon. In the back of the wagon, he had three short ladders, which I discovered later had been built especially so they fitted together and made a ladder long enough to reach up near the top of the tallest cactus. No matter how expert one is at climbing, he would have some difficulty without a ladder in getting up where the Elf Owls nest, for they prefer the highest Woodpecker's hole in the top of the giant cactus.

In the semi-desert country around Tucson, the Woodpeckers find very few trees, not nearly enough for nesting places. As a substitute, they take the giant cactus. When they drill a cavity into the green cactus trunk, the sap oozes out and hardens, making a hard-shelled house that is very permanent. Oftentimes when the cactus falls to decay, one may pick up these gourd-shaped homes made by the Woodpeckers. In many places, one may see the candelabra-like branches of the giant cactus riddled with Woodpecker holes. These furnish secure homes for the little Elf Owl and we had no difficulty in finding plenty of these tiny Owls by using the long ladder.

The Elf Owl is abundant about Tucson. Mr. Brown said, "Their food consists largely of ants, beetles, and grasshoppers." The bird is almost entirely nocturnal in habits and is seldom seen moving about in the daytime. It is a constant night hunter, flitting about over the desert for insects, very seldom preying on other birds or animals.

WILLIAM L. FINLEY.

Photo by W. L. Finley and H. T. Bohlman

ELF OWL

No bigger than an English Sparrow, but still an Owl

ORDER OF PARROT-LIKE BIRDS

Order *Psittaci;* family *Psittacidæ*

THE order of Parrot-like birds (*Psittaci*) is characterized by a relatively short, hooked bill; feet with four toes, two forward and two backward, and perfectly adapted for grasping and climbing as well as for holding food when eating; tongue short, usually thick and fleshy, sometimes with the tip brush-like or fringed; tail-feathers usually numbering twelve; secondaries acutely conical; and by various other anatomical peculiarities. They are noisy in the wild state, their voices harsh and unmusical. Many of the species, but not all, learn to speak in captivity.

The typical Parrots occur throughout the tropical and most of the subtropical portions of both hemispheres. They are the only Parrot-like birds found in America or Africa. The species of typical Parrots are very numerous, more than five hundred and fifty being known, of which number, however, only one, the Carolina Paroquet, is a resident of the United States, and but one other, the Thick-billed Parrot, casually crosses the international boundary at the south.

Parrots, it is believed, mate for life. Their eggs are immaculate white and are usually deposited in the trunks of trees; the young when hatched are either partly or entirely covered with down and are cared for in the nest.

The Parrot family are not good walkers, but they can climb, and they fly exceedingly well, often going long distances in search of their food of fruit and seeds. Bright colors predominate in the plumage and there is but slight, and in many species no, sexual variation in coloration.

CAROLINA PAROQUET

Conuropsis carolinensis (*Linnæus*)

A. O. U. Number 382

Other Names.— Kelinky; Carolina Parrakeet.

General Description.— Length, 13 inches. Color, green with yellow head.

Color.— Forehead, front of crown, lores, space below eyes, and upper part of cheeks, orange; rest of head and neck (all round), clear lemon yellow; back and shoulders, clear yellowish-green, the rump, brighter and less yellowish-green; lesser and middle wing-coverts, deep Paris green margined with paler and brighter green; greater coverts and inner secondaries more yellowish-green, paler and more yellowish-green terminally and along margin of outer webs; secondaries (except innermost ones) and primary coverts, dark green, the primaries similar but becoming darker and duller terminally (especially on inner webs, where passing into dusky on margin), the longer primaries (except outermost) broadly edged with pale greenish-yellow basally; upper tail-coverts and tail, clear light parrot green with black shafts, the shafts of middle feathers, whitish basally; under parts of body, including foreneck and under tail-coverts, clear light apple green, the under wing-coverts, similar but more yellowish-green, sometimes intermixed with yellow; bend of wing, orange intermixed with yellow; anal region and lower portion of thighs, yellow, sometimes tinged with orange; under primary coverts and under surface of primaries, brownish-gray, tinged with yellowish-olive, the under surface of tail similar but more strongly tinged with yellowish-olive; bill, light cream-buff or cream-white; iris, dark brown; bare eye space, pale flesh color or pinkish white; legs and feet, pale flesh color or pinkish white.

Nest and Eggs.—NEST: In hollow tree. EGGS: 3 to 5, white.

Distribution.— Formerly inhabiting the Atlantic coastal plain of the United States, from Florida to Virginia (occasionally to eastern New York), and west to Texas, Oklahoma, Colorado, and north to Iowa and Wisconsin, but now totally extirpated over much the greater part of its former range and so nearly extinct that only a few small colonies may yet exist in remote and uninhabited parts of southern Florida.

The Carolina Paroquet is to-day nearly, if not quite, extinct, no record of its appearance having been made for several years. Once common in the Southern States from Maryland and Colorado, they have passed away before the guns of the white man. Observers tell us that they traveled about the country in flocks and their inroads on fruit orchards won for them a dislike that in the end meant their inevitable destruction. When a flock was shot into, the survivors after flying a short distance would return again and again to their fallen companions until sometimes an entire company would be wiped out.

Many of the early writers and explorers give accounts of their appearance and habits. Thus John Lawson, Gentleman, in his *History of Carolina,* published in London in 1714, writes: "The Parrokeetes are of a green colour, and orange-coloured half way up their heads. Of these and the Allegators there is none found to the northward of this Province. They visit us first when mulberries are ripe, which fruit they love exceedingly. They peck the apples to eat the kernels, so that the fruit rots and perishes. They are Mischievous to Orchards. They are often taken alive and will become familiar and tame in two days. They have their nests in hollow trees in low swamp ground. They devour the Birch Buds in April, and lie hidden when the weather is frosty and hard."

Many years have now passed since the Carolina Paroquet was seen in the Carolinas. Florida is, or was, its last stand. Dr. Frank M. Chapman found fifty or more individuals in the southern part of that State in 1889. Writing of his experiences he says: "Late in the afternoon of our arrival we started a flock of seven Paroquets from a productive patch of thistles which proved to be their favorite food. Evidently their meal was finished and they were ready to retire, for they darted like startled Doves through the pines, twisting and turning in every direction, and flying with such rapidity, they were soon lost to view; the ring of their sharp, rolling call alone furnished proof it was not all a vision."

Two days later he again came upon a flock of which he writes: "Several were skillfully dissecting the thistles they held in their feet, biting out the milky seed while the released fluffy down floated away beneath them. There was a sound of suppressed conversation; half-articulate calls. We were only partially concealed behind a neighboring tree, still they showed no great alarm at our presence; curiosity was apparently the dominant feeling."

Photo by R. W. Shufeldt

CAROLINA PAROQUET

This is a picture of a live bird, although the species is almost extinct

Following Dr. Chapman's discovery other observers occasionally reported finding them, but these reports became less frequent as time passed and of late years have altogether ceased.

T. Gilbert Pearson.

THICK-BILLED PARROT

Rhynchopsitta pachyrhyncha (*Swainson*)

A. O. U. Number 382.1

General Description.— Length, 16 inches. Color, green with red on head, bend of wing, and thigh.

Color.— Forehead, front of crown, space over eye, and front lesser wing-coverts, deep poppy red or dull carmine; lower portion of thighs, light poppy red; a spot of dark reddish-brown or blackish-brown immediately in front of bare eye space, this dark color extending, narrowly, along the upper margin of the naked eye space; under primary coverts, clear chrome-yellow, forming a conspicuous patch on under side of wing; under surface of wing-feathers and tail-feathers, plain brownish-slate color, tinged with olive in certain lights; rest of plumage, yellowish parrot green or bright oil green, brighter on sides of head, slightly lighter (sometimes duller) on under parts, bend of wing sometimes (in older individuals?) partly red; bill, dull black; iris, brownish-red; legs and feet, dull black.

Nest and Eggs.— Nesting unknown, but probably similar to the rest of the genus — nest in a hollow tree, and eggs white.

Distribution.—Mountains bordering the Mexican tableland, northward casually to the Chiricahua Mountains, Arizona.

The Thick-billed Parrot appears to be either very stupid or very curious — excessive curiosity is likely to convey the impression of stupidity — for it has an exasperating habit of following travelers in flocks which keep up such an uproar that every other bird and beast is likely to become alarmed and either make off or conceal itself. This is nowise pleasing to the traveler who happens to be a naturalist or an ornithologist, and therefore intent upon observing the wild-life forms, many of which would remain in sight long enough to be looked at but for the racket made by the Parrots.

The birds are most likely to be encountered in the piñon pine forests, where they feed freely upon the seeds which they extract with their beaks from the tough cones. In the United States they are found chiefly in the cañons of the Chiricahua Mountains, in Arizona.

GEORGE GLADDEN.

Photo by C. William Beebe (copyrighted)

THICK-BILLED PARROT

The only species of its order which finds it way across the Rio Grande

ORDER OF CUCKOOS, ETC.

Order *Coccyges*

SEVERAL groups of birds with little outward resemblance to one another have been grouped in this order. There are three suborders, each with one family. The first suborder, *Cuculi*, and family, *Cuculidæ*, contains the Cuckoos, Anis, and Road-runners. The second, or *Trogones*, includes the Trogons, but one species of which enters the United States. The third suborder is that of the Kingfishers (*Alcyones*).

CUCKOO FAMILY

Order *Coccyges;* suborder *Cuculi;* family *Cuculidæ*

BIRDS of the Cuckoo family are long-tailed, mostly arboreal, but sometimes terrestrial and ground-scratching. The toes are arranged in pairs, two pointing forward and two backward. There are eight to ten feathers in the tail. The nostrils are exposed, and the bristles at the corners of the mouth are either inconspicuous or missing. The bill is extremely variable as to size and shape, but is always compressed and more or less decurved at the tip.

The young are hatched naked and are cared for in the nest. The nest (if any) is of very rude construction. The eggs are extremely variable as to coloration and number and are usually deposited at intervals so that eggs and young are often found in the same nest at the same time. Many foreign species are parasitic in their reproduction, laying their eggs in the nests of other birds, and allowing their young to be reared by the foster parents, often at the sacrifice of the latter's progeny, who are frequently unceremoniously crowded or thrown from the nest by the interloper.

The Cuckoo family is a very extensive group of nearly world-wide distribution, only the colder regions, where their insect food is wanting, being without any representatives of it. The group is much more numerously represented in the eastern than in the western hemisphere, only eleven of the forty-six genera and forty-three of the two hundred and two species enumerated in Sharpe's *Hand-list of the Genera and Species of Birds* being American. All the American forms are peculiar, however, none of the genera being represented elsewhere and none being parasitic as is the common European bird. This family includes: the group which bear the family name, Cuckoo, five species and subspecies of which are found in the United States; the Road-runners or Ground Cuckoos; and the Anis.

As a rule the Cuckoos are birds of dull plumage, a more or less plain grayish, brown, or partly rufous coloration prevailing; but there are exceptions in some of the Old World genera. No American species of the group is remarkable for showy coloration.

GROOVE-BILLED ANI

Crotophaga sulcirostris *Swainson*

A. O. U. Number 384

Other Names.— Tick Bird; Black Witch; Jew Bird.

General Description.— Length, 12 to 14 inches. Plumage, black. Upper bill with several distinct curved grooves and ridges, parallel with curve of ridge.

Color.— Dull black, faintly glossed with violet on wing-coverts, wings, and middle tail-feathers, still more faintly glossed with greenish on primaries and under parts; feathers of head and neck rather broadly edged

with dull purplish-bronze, the shoulders and back and smaller wing-coverts with a broad U-shaped submarginal mark of dull greenish-bronze, the terminal margin of each feather and a narrow border to the bronzy submarginal mark, black; feathers of chest with similar but narrower and less distinct markings; bill, black or brownish-black, often partly grayish-brown or horn color; naked skin of loral and eye regions, dull black; iris, dark brown; legs and feet, black.

Nest and Eggs.— Nest: In tree, frequently orange or lemon, or thorny bush; bulky, flat; constructed of thorny twigs, sticks, lined with fibrous roots or green leaves. Eggs: 3 to 5, milky blue.

Distribution.— The whole of Mexico and Central America, southward to Peru, Venezuela, and British Guiana; north regularly (breeding) to Rio Grande valley in Texas and Lower California, casually to Louisiana, Florida, Kansas, and southern Arizona.

The Groove-billed Ani is another of the border birds which barely earns the right to be considered one of Uncle Sam's feathered wards, by establishing a residence only in southern Texas. According to Captain Bendire its habitat is chiefly the lowlands, and the birds are seldom seen at an altitude of more than 700 feet above the sea. Their apparent fondness for the company of cattle is due not only to the fact that they feed upon insects started up by the movements of the animals (which the disreputable Cowbird also does), but to their feeding upon parasites which they find on the animals' skins, thereby doing the steers a service similar to that performed by the famous Rhinoceros Bird for its burly companion.

This work the Anis do mainly at night when the animals are lying down, though they have been seen in daylight perched on the animals' backs, and one observer asserts that they will cling to a cow's tail and clear it of insects to its extremity. In flight, the Anis give the impression of being very loose-jointed creatures, their wings flopping clumsily and their tails blowing about in the breezes as if insecurely attached.

Judging from the living birds only, no one would suspect that the Anis were related to the Cuckoos; their appearance and habits are very different. The Anis are gregarious and live in open districts. Even in their nesting they are social birds, several females laying their eggs in the same nest.

ROAD-RUNNER

Geococcyx californianus (*Lesson*)

A. O. U. Number 385

Other Names.— Ground Cuckoo; Chaparral Cock; Snake Killer; Lizard Bird; Churca; Paisano; Correcamio; Cock of the Desert.

General Description.— Length, 20 to 24 inches. Color above, olive streaked with tawny-brown and buffy-whitish; below, whitish streaked on chest. Tail, long and graduated; feathers of head bristle-tipped; entire plumage, coarse and harsh.

Color.—Feathers of forehead and anterior part of crown, blue-black centrally, each with a broad lateral spot of russet often edged with buffy-grayish, the rest of crown (including bushy crest on the back of the head), blue-black, broken by edgings of tawny-brown; hindneck and upper back, blue-black, the feathers broadly edged with light tawny-brown passing into dull buffy-whitish on edges, producing a conspicuously streaked effect; feathers of lower back, shoulders, and wing-coverts, similarly marked, but the central area of each feather, olive glossed with bronze-greenish, and edged with black, the paler markings on wing-coverts larger and paler, in form of longitudinal spots; greater coverts, olive glossed with bronze, and with a large terminal spot of white on each web; inner secondaries olivaceous, glossed with bronze-greenish edged narrowly with black, and broadly margined (on both webs) by dull whitish; primary coverts, olive-dusky broadly margined at ends with dull white; primaries, blackish, faintly glossed with greenish, margined terminally with dull white and crossed, near middle portion, by a broad band of the same, composed of marginal spots on outer webs only; rump, plain grayish-brown; upper tail-coverts and middle pair of tail-feathers, bronzy-olive glossed with purplish and margined with dull white; remaining feathers, glossy blue-black on outer webs, more greenish on inner webs, tipped, and narrowly margined (on outer web) with white, decreasing in extent to the second pair; lores, dull whitish, the feathers with projecting black bristle-like shafts; cheeks and space below eyes, mixed dull whitish and pale tawny-brownish, barred and spotted with black; sides of head, streaked with black and dull whitish; chin and throat, mostly dull white; foreneck, sides of neck and chest light ochraceous-buff passing into whitish on edges of feathers, each feather with a center streak of black, these streaks narrow in front, much broader on sides of neck and chest; rest of under parts, plain grayish

buffy-white; inner webs of lateral tail-feathers, pale gray on under surface in front of the white tip; bill, dusky horn color; iris, golden yellow to orange; bare eye space around blue in front passing into bluish-white beneath and behind eye, the rear portion orange-red; legs and feet, pale bluish, the large scales of leg pale yellowish or cream color margined with pale bluish.

Nest and Eggs.— NEST: Usually in cacti, mesquite, sage brush, or thorny bushes; a large coarse structure of sticks, lined with grass, feathers, strips of bark, snake skin, or rootlets, with slight depression. EGGS: 4 to 6 usually, but sometimes 2 or 12, chalky white or pale yellowish.

Distribution.— California, Colorado, Kansas, and western and middle Texas, south through Lower California and the table-land of Mexico to Puebla.

The Road-runner is one of the most striking characters of the cactus belt of the Southwest. When we first went to Tucson, Arizona, we were anxious to find a Road-runner. Day after day, we searched through the cactus and kept our eyes open. We found several old nests and occasionally we would catch a glimpse of a slim, long-tailed bird running through the cactus. One day when we least expected it, a Road-runner slid across the road, hopped up into a cholla cactus and was instantly lost to sight in the thorny mass. We drove around the bush slowly, once, twice, closer and closer till we could see through the tangle. But no Road-runner! She had disappeared, and yet she could hardly have escaped without our seeing her. A slight movement in the cactus — there she was, sitting bolt upright holding a lizard in her bill. Until she moved, she was as completely hidden as if she had not been there.

In this nest were one fresh egg, one egg just ready to hatch, two featherless black-skinned young birds, and two young ones about grown and ready to leave home. This certainly verified the statement of Elliott Coues: "Perfectly fresh eggs and newly hatched young may be found together, and by the time the last young are breaking the shell, the others may be graded up to half the size of the adult."

I have occasionally seen an old Road-runner that takes a delight in out-distancing a team of horses, but sometimes a Road-runner is not accustomed to our modern method of traveling. One day a friend was spinning down the Oracle Road in his automobile when, at the turn, a Road-runner dropped into line ahead and set the pace down the smooth stretch. The driver turned on a little more gasoline. The Road-runner looked over his tail at the horseless carriage. It was gaining on him! As the machine bore down on the astonished bird, the feathered racer was scared. He cocked his tail suddenly to put on the brake, made a sharp turn to the left, dodged through the cactus and creosote and away he went at top speed as far as he could be seen.

Photo by W. L. Finley and H. T. Bohlman

ROAD-RUNNER

While some people accuse the Road-runner of killing other birds, especially young Quail, our experience showed that he lived almost entirely on lizards. The young birds in the nest were fed on lizards almost from the time they were out of the egg. The reptile was always killed and then thrust head down into the mouth of the youngster. The tail for a time would hang out of his mouth, but as the head end was digested, the young bird gulped a little now and then, until finally the end of the tail disappeared.

WILLIAM L. FINLEY.

YELLOW-BILLED CUCKOO

Coccyzus americanus americanus (*Linnæus*)

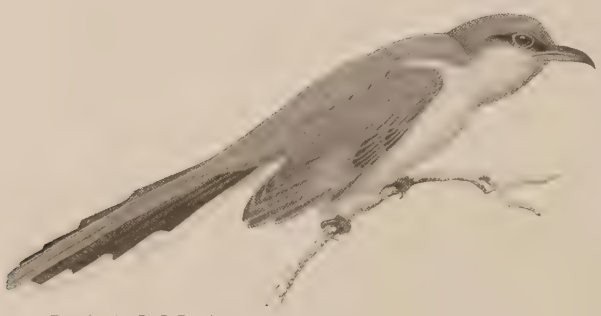
A. O. U. Number 387. See Color Plates 58

Other Names.— Rain Crow; Rain Dove; Storm Crow; Chow-Chow; Kow-Kow.

General Description.— Length, 11 or 12 inches. Color above, grayish-brown; below, white.

Color.— Above, plain grayish-brown, faintly glossed with bronzy, usually becoming more grayish on forehead, the outer webs of *primaries, suffused with rufescent brown,* sometimes nearly uniform dull cinnamon-rufous; middle pair of tail-feathers, usually becoming more dusky terminally, the remaining tail-feathers, black, faintly glossed with bluish or greenish, passing into grayish-brown basally, each *tail-feather, very broadly tipped with white,* this decreasing in extent from the outermost, on which the white extends much farther on the outer web than on the inner; sides of head, grayish-brown, sometimes concolor with crown and hindneck, sometimes much darker; below eye, lower portion of sides of head, and entire under parts, dull white, faintly shaded with pale bluish-gray, except on under parts of body and under tail-coverts, which are sometimes very faintly tinged with pale buffy; bill, slate-black above, yellow on more than basal half below, and on cutting edge above; iris, dark brown; naked eyelids, grayish; legs and feet, pale bluish-gray.

Nest and Eggs.—NEST: Generally in fork of a tree as high as 25 feet up; a frail structure of twigs, grass, leaves, and catkins, so shallow that it is remarkable the eggs do not roll out oftener. EGGS: 2 to 6, pale dull, greenish-blue.



Drawing by R. I. Brasher

YELLOW-BILLED CUCKOO (¼ nat. size)

Mysterious and secretive in habits, but highly useful

Distribution.— Parts of North and South America; breeds from North Dakota, Minnesota, southern Ontario, Quebec, and New Brunswick south to Louisiana and northern Florida, and west to South Dakota, Nebraska, and Oklahoma; migrates through the West Indies and Central America; winters in South America south to Ecuador, Bolivia, and Argentina.

BLACK-BILLED CUCKOO

Coccyzus erythrophthalmus (*Wilson*)

A. O. U. Number 388. See Color Plate 58

Other Names.— Rain Crow; Kow-Kow.

General Description.— Length, 11 or 12 inches. Color above, olive-brown; below, white.

Color.— Above, plain olivaceous hair-brown, glossed with bronze, passing into a more grayish hue on forehead, the inner primaries and outer secondaries sometimes slightly more rufescent basally; *tail-feathers* (except middle pair) *narrowly but conspicuously tipped with dull white* and crossed by a broad subterminal bar of dusky; loral region, brownish-gray, like

Courtesy of the New York State Museum

BELTED KINGFISHER *Ceryle alcyon* (Linnaeus)

MALE FEMALE

BLACK-BILLED CUCKOO
Coccyzus erythrophthalmus (Wilson)

YELLOW-BILLED CUCKOO
Coccyzus americanus americanus (Linnaeus)

All ⅓ nat. size

forehead; sides of head, grayish-brown, like hindneck, etc.; cheeks, space below eyes, chin, throat, and upper chest, pale buffy-grayish; rest of under parts, plain dull white, the under tail-coverts more buffy or brownish-white; upper bill, black; lower bill, pale grayish-blue dusky terminally; iris, deep brown; naked eyelids, bright red; legs and feet, pale bluish-gray.

Nest and Eggs.— NEST: A more carefully constructed nest than the Yellow-billed Cuckoo's; placed in small trees or bushes, usually within 8 feet of the ground; made of twigs, strips of bark, rootlets, and weed stems, lined often with small catkins, and very shallow. EGGS: 2 to 5, plain dull bluish-green.

Distribution.— North and South America; breeds from southeastern Alberta, southern Manitoba, southern Quebec, and Prince Edward Island, south to Kansas, Arkansas, North Carolina, and mountains of Georgia; winters in South America from Colombia to Peru.

Few birds are more widely known that the Cuckoo. He has his place in the Bible, and was honored by the consideration of Aristotle and Pliny. In mythology the bird figures more than once, and especially when Jupiter appeared to Juno in its form. Wordsworth's lines

> O Cuckoo! shall I call thee bird?
> Or but a wandering voice,

though of course addressed to the European species, apply as well to ours.

The frequency with which the English Cuckoo has been put into verse by the poets of its country, its parasitic habit of laying its eggs in the nests of other birds, and the ubiquity of the so-called "cuckoo clock," have conspired to make the name of the bird very well known in this country. In point of fact, the American Cuckoo is a totally different bird from the English one — different in size, different in color, and very different in habits and disposition. In the first place, the American Cuckoo does not make a practice of laying its eggs in other birds' nests; indeed, it nearly always builds a nest of its own, such as it is, and brings up its family as every other self-respecting bird does. As to the

Photo by H. K. Job Courtesy of Outing Pub. Co.

BLACK-BILLED CUCKOO ON NEST

cuckoo-clock, its performance does not even remotely suggest the American Cuckoo's song which, in fact, is simply a series of guttural *chucks* and *clucks,* most unbird-like and wholly unmusical. Finally, the English bird has a decidedly Hawk-like appearance, while the American species looks a little like an attenuated pigeon, with a disproportionately long neck and tail.

The comparatively slight difference between the appearance and habits of the two species, the Yellow-billed and the Black-billed, makes it proper to consider them jointly. Sometimes Mrs. Yellow-billed Cuckoo employs Mrs. Black-billed to bring up her children, and at other times the Black-billed offspring are deposited in the Yellow-billed home. Both species are known as the

Courtesy of Nat. Asso. Aud. Soc.

YOUNG YELLOW-BILLED CUCKOO

"Rain Crow" because of the belief — especially among farmers — that their guttural cry predicts rain. But why "Crow," a bird which is uniformly and famously black all over, while the Cuckoo varies from white to brown, but is essentially a light-colored bird? This is one of the queerest freaks of popular terminology, and suggests that we have to thank for it somebody who couldn't tell black from white.

Both of these Cuckoos are essentially birds of mystery. Not only in their rather unearthly call, but in their specter-like comings and goings, and general behavior, they are not like unto other birds. So one is not surprised to learn that the Black-billed, at any rate, is a nest-robber, and is generally recognized as such in the bird-world. Mr. Burroughs mentions three instances in which Robins have actually killed Cuckoos; in one case the Robins caught the robber in the very act, and so pecked and mauled him that he died of his injuries. Audubon gave the same bad character to the Yellow-billed, which, he said, "robs smaller birds of their eggs which it sucks upon all occasions, and is cowardly without being vigilant. On this account it falls prey to several species of Hawks, of which the Pigeon Hawk may be considered its most dangerous enemy." But the Pigeon Hawk is the enemy of all birds that it can overtake and kill, and these include many species larger than itself.

In his manner the Cuckoo gives the impression of being deeply preoccupied and quite absent-minded. He slips in and out of trees like a ghost. Upon first alighting, he looks about him as if he were dazed, but almost immediately recovers himself and proceeds to search for his preferred fare of "tent" caterpillars of which he destroys great numbers, thereby placing himself in the category of highly useful birds. In flight, the Yellow-billed species is readily identifiable by the white markings on its long tail. These markings are different from those shown in the tail of the Mourning Dove, which otherwise — though after all very faintly — resembles the Cuckoo. GEORGE GLADDEN.

The California, or Western, Cuckoo (*Coccyzus americanus occidentalis*) is the western replica of the Yellow-billed Cuckoo from which it differs only in size.

The Mangrove Cuckoo (*Coccyzus minor minor*) and the Bahama Mangrove, or Maynard's, Cuckoo (*Coccyzus minor maynardi*) are found in the Florida Keys and the West Indies south through Mexico to Central America and northern South America. They are plain grayish-brown above, faintly glossed with bronzy; the tail-feathers are tipped with white, the middle pair more narrowly than the others; upper parts of sides of head dull black; the underparts are dull ochraceous-buff or cinnamon-buff; their bills are black above and yellow underneath. Maynard's Cuckoo is smaller than the Mangrove Cuckoo.

Probably no group of insects contains a greater number of orchard pests than the order Lepidoptera, which comprises butterflies and moths, with their larvæ, or caterpillars. Tent caterpillars, cankerworms, fall webworms, tussock moths, and a host of others are among the worst enemies of the fruit grower. It is, therefore, fortunate that there are in the United States two birds that subsist, to a great extent, upon caterpillars, apparently preferring them to any other food. These are the Cuckoos, the Yellow-billed and the Black-billed.

For years it has been a matter of common observation that these birds feed largely on caterpillars, but, until a number of stomachs had been examined, it was not known how great a proportion of their food is made up of these harmful insects. The examinations indicated that caterpillars of various species, including some of the most destructive, constitute more than 48 per cent. of their food. One stomach contained at least 250 tent caterpillars, probably a whole colony, in the young stage. In another 217 heads of the fall webworm were counted, and this probably fell far short of the real number, as these larvæ are very small, and in many instances nothing but jaws remained undigested.

Many caterpillars are protected from the attacks of birds and parasitic insects by a covering of hair, and hairy caterpillars are only rarely eaten by most birds. Cuckoos, however, seem to prefer them to the smooth kind, and apparently eat them whenever they can be found. Caterpillar hairs are often stiff, bristly, and sharp at the end, like minute thorns, and it frequently happens that when a Cuckoo's stomach is opened and emptied it is found to be completely furred on the inside by hairs which have pierced the inner lining and become fast. Cuckoos eat many noxious insects besides caterpillars, such as beetles, bugs, and grasshoppers. Unfortunately, they are naturally rather shy birds, preferring the edges of the woodland and groves to the more open cultivated grounds and orchards. If, however, they are unmolested, they soon gain confidence, and in many cases frequent shade trees about houses and lawns, or even in the very heart of the city.

TROGONS

Order *Coccyges;* suborder *Trogones;* family *Trogonidæ*

THE Trogons are forest birds, and therefore arboreal, passing their entire life among the trees, where they nest in natural cavities or in those abandoned by Parrots or the larger Woodpeckers. They feed chiefly on fruits and insects, both of which they take while flying. As a group the Trogons are celebrated for their beauty of plumage, some of the species being among the most beautiful of birds, the magnificent Quetzál (*Pharomachrus mocinno*), of Guatemala, excelling even the far-famed Birds of Paradise in the gorgeous beauty of its plumage and exquisite grace of form.

The Trogons are found in the tropics of both hemispheres; but they are most numerous in America, where eight genera and about thirty-two species occur. One species only is found north of Mexico, the Coppery-tailed Trogon, and it is rare.

The special characteristics of the Trogon family are: bill short (much shorter than the head), broad at the base, and the edges toothed; the gape or corners of the mouth well covered with bristle-tipped feathers; feet weak, the lower section of the leg shorter than the longest front toe, and front toes united for about half their length; wing short, rounded, and very concave underneath; tail longer than the wing and composed of twelve feathers; plumage dense and soft and easily detached; colors bright, brilliantly metallic in adult males, and the under parts of the body pure red, orange, or yellow; young usually spotted and without bright colors.

COPPERY-TAILED TROGON

Trogon ambiguus (*Gould*)

A. O. U. Number 389.

General Description.— Length, 11¾ inches. Males are metallic bronze-green above, and geranium-red below; females are brown above, and pale geranium-red below.

Color.—Adult Male: Forehead (sometimes part, occasionally whole of crown, also), black; back of head (usually part of crown), hindneck, back, shoulders, and forward portion of lesser wing-covert region, bright metallic-green, bronze-green, or golden-bronze, passing into metallic pure green or bronze-green, on rump and

upper tail-coverts; middle pair of tail-feathers bright bronze or copper-bronze, changing to a greenish hue in some lights (the color sometimes more greenish basally), broadly and abruptly tipped with black or bluish-black, the next pair of feathers similarly colored on outer web, but inner web darker and more purplish-bronze passing into blackish basally, the terminal black area broader and less sharply defined; remaining tail-feathers very broadly tipped with white (this white terminal area margined basally by a narrow and usually interrupted bar of black); wing-coverts, delicately marked with fine wavy lines of black and white; primaries, slate-black, the outer webs mostly pale gray or grayish-white; lores, cheeks, ear region, chin, and throat, uniform black or slate-black; chest, bright metallic bronze-green, bronze, or copper-bronze, succeeded by a crescentic band of pure white; the remaining under parts, pure geranium-red; thighs, slate-black or blackish-slate, the longer feathers broadly tipped with pink or pinkish-white; bill, yellow; naked eyelids, red or orange; iris, dark brown; feet, brownish. ADULT FEMALE: Forehead, and at least forward portion of crown, slate color or brownish-slate, passing into plain brown on back of head, hindneck, back, and shoulders; the rump and upper tail-coverts similar but (especially the latter) paler; wing-coverts, similar in color to rump and upper tail-coverts; middle pair of tail-feathers, vandyke-brown to chocolate-brown, broadly and abruptly tipped with black; next pair, blackish-brown or brownish-black, the outer web edged (except terminally) with lighter brown; remaining feathers, extensively tipped with white; lores and under eye region, dark-slaty or blackish; ear region crossed obliquely by a broad bar of pale brownish-buff or brownish-white and tipped by an oblique bar of black; a broad brownish-white eye-ring, interrupted on upper and lower eyelids; cheeks, chin, and throat, brownish-slate to grayish-brown, passing into brown (like color of back) on chest; and crossed immediately behind brown jugular area by a crescentic band of brownish-white or pale brownish-buff; lower abdomen, flanks, anal region, and under tail-coverts, light geranium-red; thighs, slate color, the longer feathers broadly tipped with whitish; bill, yellow (duller than in adult male); iris and feet as in adult male. YOUNG: Head, neck, and breast, dull brownish-gray or grayish-brown; an eye-ring and an oblique bar across ear region of white; tail similar to adult female; remainder of upper parts, brown; under parts in general, grayish-white; wing-coverts with buffy spots margined with black.

Nest and Eggs.— NEST: A hole in a bank, about 18 inches deep. EGGS: 3, dull white.

Distribution.— From southern Arizona and extreme southern Texas south over greater part of Mexico.

The Coppery-tailed Trogon utters its call in the manner of the Peacock, sitting bolt upright on a limb, its long tail hanging straight down, and its bill pointed at the zenith. This call is a series of soft and rather musical notes not unlike those of a contented hen. Those who examine mounted specimens should remember that the geranium-red color of the breast plumage is likely to fade considerably after the skin is removed from the bird's body.

KINGFISHERS

Order *Coccyges;* suborder *Alcyones;* family *Alcedinidæ*

THE Kingfisher family is nearly cosmopolitan and is very numerously represented in the eastern hemisphere, especially in the Malay Archipelago and thence to New Guinea, where a great variety of types are found, many of them among the most beautiful of birds. There are about 200 species in all. The group is poorly represented in America, where occur only two genera with about 11 species and subspecies. Only one genus is found north of the Rio Grande.

The American Kingfishers are a well-marked group of birds. Their heads are large, completely feathered, and more or less crested, though sometimes only the feathers at the back of the head and on the nape are slightly elongated. Their bills are long, strong, straight, and much deeper than wide at the base. Their wings are moderate to rather short with the longest primaries always longer than the longest secondaries; the tip of the wing is rather pointed. Tail feathers number twelve, and the tail is from one-half to two-thirds as long as the wing and is slightly rounded. The feet are relatively very small; the first toe is much shorter than the inner toe and connected with the second so as to form with it and the others a broad flattened sole, the surface of which is conspicuously granulated.

In coloration none of the American Kingfishers have the bright hues of the spectrum though some have the upper parts of a rather dull metallic bronze-green. In all of the American forms the sexes are more or less different in coloration.

As their name implies, they feed chiefly on small fishes, though some of the Old World species are forest birds and subsist on reptiles and other forms of animal life. Although small fishes are the principal portion of the diet of Kingfishers, they destroy also a few aquatic insects which do injury to the young of fish and frogs.

Some of the forest-inhabiting species of the eastern hemisphere nest in cavities of trees, but the true Kingfishers nest in holes which they dig in banks. The five to eight eggs are invariably pure white. The young are hatched naked and are cared for in the nest after the manner of perching birds.

BELTED KINGFISHER

Ceryle alcyon (*Linnæus*)

A. O. U. Number 390 See Color Plate 58

Other Names.— Kingfisher; the Halcyon.

General Description.— Length, 12 inches. Color of upper parts and of belt, bluish-gray; under parts, white; females with a reddish band across abdomen. Head, crested.

Color.— Adult Male: Above, including sides of head, clear bluish-gray interrupted by a white collar across hindneck; feathers of crown (especially those of crest) with a center streak of black, those of back, wings, etc., with very slender black shaft-streaks, wing-coverts and secondaries usually with a few minute irregular white markings, the latter with portion of outer web next to shaft and most of inner web, black; primary coverts and primaries, slate-black, the first minutely tipped with white, the primaries with basal half spotted with white, the inner ones, together with the outer secondaries, rather narrowly tipped with white; middle pair of tail-feathers, bluish-gray with a center streak of black (this sometimes confined to shaft), the latter usually margined on each side by small white spots; remaining tail-feathers, slate-black, the outer web (except of lateral pair) broadly edged with bluish-gray, the inner black portion spotted with white, the inner webs barred with white; outermost similar but without distinct, if any, bluish-gray edging, the white spots reaching to outer margin; a conspicuous spot of white in front of eye and another but smaller white spot immediately beneath eye; rear of cheeks, sides of neck, chin, throat, and foreneck, immaculate white, the front of cheeks deep bluish-gray or broadly streaked with the same; *a broad band of bluish-gray across chest;* rest of under parts, white, the sides and flanks mostly bluish-gray (usually intermixed or flecked with white); under wing-coverts, and greater part of basal half of inner webs of primaries, immaculate white; bill, black; iris, dark brown; legs and feet, livid slate color. Adult Female: Similar to the adult male *but with a band* (sometimes incomplete or interrupted) *across lower breast, together with sides and flanks, cinnamon-rufous,* the innermost under wing-coverts sometimes tinged or suffused with the same.

Nest and Eggs.— Nest: At extreme end of a burrow in the bank, from 4 to 15 feet long. Eggs: 5 to 8, laid on the bare floor of the enlarged extremity of the tunnel.

Distribution.— North America and northern South America; breeds from northwestern Alaska, northwestern Mackenzie, central Keewatin, northern Quebec, and Newfoundland south to the southern border of the United States; winters from British Columbia, Nebraska, Illinois, Indiana, Ohio, and Virginia south to the West Indies, Colombia, and Guiana, and irregularly as far north as Massachusetts, New Hampshire, and Ontario.

Drawing by R. I. Brasher

BELTED KINGFISHER (male; ⅛ nat. size)

A feathered Ike Walton who is a stickler for his fishing rights

This is one of the pronounced and picturesque personalities of the feathered world — a handsome, sturdy and self-reliant bird who makes his living by the persistent, skillful, and largely harmless practice of an ancient and respected art.

It seems worth while to emphasize at once

Photo by H. K. Job Courtesy of Outing Pub. Co.

YOUNG KINGFISHER

Emerging from its nest-burrow

the character and purpose of the Kingfisher's activities. Too many of his human imitators fear, or even believe, that he is destructive to game fish, especially brook trout. But it seems that this charge cannot be substantiated, and that the bird catches chiefly minnows, chubs, and related shallow-water fish which are pests to the fisherman. And it is known that a very considerable part of his diet is composed of crawfish, frogs, and even injurious beetles and locusts, which he takes when the fishing is bad, because of rough water, or for other reasons. Consequently, most discerning and well-informed disciples of the immortal Izaak are disposed to take their hats off to this brother fisherman-in-feathers who is always good company on a trout brook and is never without his click-reel.

What wonderful eyesight he must have — little, if any, less keen than that of the Eagles and the Hawks. Many of his dives after his prey he makes from a fluttering halt in his flight, ten or fifteen feet above the surface of the water; but not infrequently he makes his plunge, like a blue meteor, from a perch fifty feet or more from the water, striking it with an impact which, one would think, would completely knock the wind out of him. It is as graceful and daring a "high dive" as is to be seen anywhere. But think of the vision which must be required to see, at that distance, a fish, often no more than two or three inches long, and generally several inches below the surface!

Angling has been called the "contemplative sport," and it is true that the typical trout fisherman likes to fish alone, though at other times he may not be a noticeably unsocial person. Nor, if he is a true sportsman, will he be secretive with his friends as to his favorite fishing grounds. With the Kingfisher it is different. Very likely he enjoys fishing; at any rate, he acts as if he does; but after all, for him fishing is a serious business, not a diversion. Consequently, he is not a gregarious bird, and furthermore he is likely to have pretty definite ideas about his "fishing rights." That is, after he has established himself in a certain locality, he resents the appearance therein of any other Kingfisher and he will attack and drive away any intruders if he can. It is hardly fair to consider this sheer selfishness. For him, fishing is pretty hard work, demanding both patience and skill; and besides, the supply of fish he can catch is never actually bountiful. So he cannot be blamed for keeping a sharp lookout for trespassers on his preserve.

Though the Kingfisher may sometimes actually spear fish with his long bill, he generally seizes them with it, and usually flies immediately to a nearby perch where he beats his prey to death and then swallows it, head foremost, an operation which sometimes is not accomplished without much squirming and writhing. Or, if he has young to feed, he flies straight to his burrow in a nearby bank.

"Among the many legends connected with the

Photo by H. H. Cleaves Courtesy of Nat. Asso. Aud. Soc.

KINGFISHER

Flying from nest in bank, Princess Bay, Staten Island, New York

European Kingfisher," says William Dutcher, "one relates that originally it was somberly clothed; but that a Kingfisher was liberated from Noah's ark and flew toward the setting sun, whereupon the sky was reflected from its back, while its breast was scorched by the rays of the

sun, and ever afterwards its plumage showed the colors of the evening sky. Another beautiful old fable is that Alcyone, daughter of Æolus, grieved so deeply for her husband, who had been shipwrecked, that she threw herself into the sea, and was immediately changed into a Kingfisher, called 'Halcyon' by the ancient Latin-speaking people.

"Pliny says: 'Halcyons lay and sit about midwinter when daies be shortest; and the time whiles they are broodie is called the halcyon daies; for during that season the sea is calm and navigable.' [The popular belief was that the seven days preceding the shortest day of the year were used in building the nest, and the seven days following were devoted to hatching the eggs. These fourteen days were called 'halcyon days.'] Even now the adjective 'halcyon' represents calm and peaceful days devoted to pleasant outings in woods or fields or along ocean-beaches, or to paddling up some quiet river, all the while learning to know the trees and wild flowers, and the songs and forms of birds."

GEORGE GLADDEN.

TEXAS KINGFISHER

Ceryle americana septentrionalis *Sharpe*

A. O. U. Number 391.

Other Name.— Texan Green Kingfisher.

General Description.— Length, 8 inches. Color above, green; below, white; males with a patch of chestnut-rufous on the chest. No crest.

Color.—ADULT MALE: Above, including sides of head (except cheeks), dark metallic bronze-green, darker and duller on crown, especially the forehead, interrupted by a white collar across hindneck; forehead freckled with whitish; wing-coverts, usually immaculate, but sometimes with a few minute spots or streaks of white; secondaries with a sub-basal narrow band of white, continuous across both webs, this white increasing in extent on inner secondaries where it involves the whole basal half; about midway between this band and tip of secondaries is another band, composed of small white spots confined to outer portion of outer web, this followed by another one of much smaller white spots, while usually each secondary has a minute white terminal spot or edging; inner primaries, usually with a single small white spot on outer web; middle pair of tail-feathers, mostly blackish, glossed with bluish or bluish-green, usually spotted on inner web with white, sometimes wholly blackish; next pair, blackish, the inner web with roundish white spots; four outer feathers (on each side), immaculate white for basal half or more, the terminal portion, blackish broken by white spots or bars on inner web; front of cheeks, greenish-black, the remainder white (sometimes spotted with greenish-black in front or along lower portion), forming a conspicuous stripe which involves the side of neck; chin, throat, and center of upper foreneck, immaculate white; sides of upper foreneck, chest, and side portion of upper breast, deep chestnut-rufous; rest of under parts, white, the sides and flanks heavily spotted with greenish-black, this heavy spotting extending across lower breast; under tail-coverts with spots of greenish-black; under wing-coverts, white, with a large V-shaped area of dusky; inner web of wings with large spots of white; bill, black; iris, dark brown; legs and feet, dusky. ADULT FEMALE: Similar to the adult male but without any chestnut-rufous, the upper chest, immaculate buffy-white or pale buff (like foreneck,

Photograph by A. A. Allen

BELTED KINGFISHER WITH SMALL SUCKER

throat, and chin), the lower chest crossed by a broad band heavily spotted with greenish-black, the lower breast, also with a similar, but usually less distinct, band; white of under parts tinged with buff, especially the chin, throat, and upper chest, which are sometimes wholly light buff.

Nest and Eggs.— NEST: A burrow in a bank. EGGS: 5 or 6, pure porcelain white, thin-shelled, deposited in the hollowed-out end of the cavity on the bare floor.

Distribution.— Southern Texas and Mexico, south to Panama.

The Texas Kingfisher, since it occurs only in the southern parts of Texas, is essentially a Mexican, if not a Central American, bird. The rattle of this small fisherman is like that of the lusty northern Kingfisher, but absurdly weaker. Like its big relative, however, it has very strong convictions as to its fishing rights, and fiercely attacks any member of its species which ventures on its preserve. It usually watches for fish from a rock in the stream, or even from a sand bar. On land it waddles awkwardly, jerking its tail as it proceeds.

Drawing by R. I. Brasher

TEXAS KINGFISHER (½ nat. size)

Like the northern species, this Kingfisher nests in a hole which it digs in a bank, and the work of excavation is shared by the male and the female, who take turns. Floods due to cloudbursts destroy many of these nests in the bird's Texan range.

Photo by C. William Beebe (Copyrighted) Courtesy of Houghton Mufflin Co.

TEXAS KINGFISHER

ORDER OF WOODPECKERS

Order *Pici;* family *Picidæ*

AS implied by the vernacular name of the group the Woodpeckers are pre-eminently distinguished for their habit of pecking the bark and decayed wood of trees in their search for grubs and other insects, and for excavating deep cavities in the trunks and branches of trees in which to deposit their eggs. While by no means peculiar to the group, these habits are nevertheless more highly developed and more universal in the Woodpeckers than in any other birds.

The Woodpeckers are essentially arboreal in their habits and obtain the larger part of their food from trees. Their physical conformation especially adapts them to this mode of life. Their legs are rather short and stout and the toes are furnished with strong sharp claws. With the exception of the genus *Picoides*, or Three-toed Woodpeckers, all North American Woodpeckers have four toes, two of which point forward and two backward. As a further aid in maintaining their hold on the trunks of trees their tails are composed of stiff feathers terminating in sharp spines which can be pressed against the bark and so serve as a prop to hold the bird in an upright position while it is at work. Thus Woodpeckers are enabled to cling easily to the trunks and branches and to strike hard and effective blows with their beaks upon the bark or wood.

Since much of the food of this family is obtained from solid wood, a wise Creator has provided most of them with a stout beak having a chisel-shaped point which forms an exceedingly effective wood-cutting instrument. The most interesting and peculiar point in the anatomy of these birds, however, is the tongue. This is cylindrical in form and very long. At the front end it generally terminates in a hard point with barbs upon the sides. On the inside end the typical Woodpecker tongue is extended in two long slender filaments of the hyoid bone which curls up around the back of the skull; in most species these extensions stop between the eyes, but in other members of the family they pass around the eye and in some others enter the right nasal opening and extend to the end of the beak. In this last case the tongue is practically twice the length of the head. The rear end of the tongue is enclosed in a muscular sheath by means of which it can be pushed out from the mouth to a considerable length and used as a most effective instrument for dislodging grubs or ants from their burrows in wood or bark.

While most birds must of necessity content themselves with such insects as they can find on the surface or in open crevices or flying in the air, the Woodpeckers are enabled by their physical construction to devote their energy to those larvæ or grubs which are beneath the bark. They locate their hidden prey with great accuracy and often cut small holes directly to the burrows of the grubs.

Woodpeckers are found in all wooded portions of the world except on the island of Madagascar and in the entire Australian region. The group is nearly equally represented in the two hemispheres, the western claiming about 22 families and 225 species and subspecies, the eastern 27 families and a little more than 200 species and subspecies. In the United States, exclusive of outlying possessions, there are now 45 species and subspecies of this family, most of which are of decided economic importance. As a family they are much less migratory than most other birds, and the majority of the species occupy the same range throughout the year, and this adds materially to their value to farmers. Their food consists so largely of wood-boring grubs, hibernating insects, and insects' eggs and pupæ that their supplies do not fail even in the coldest weather.

With the possible exception of the Crow no birds have been subject to so much criticism as the Woodpeckers. When they are seen scrambling over fruit trees and their holes are found in the bark it is concluded that they must be doing harm. The Woodpeckers,

except a few species, rarely disfigure a healthy tree. But when they find a tree infested by wood-boring larvæ, they locate the insects accurately, draw them out, and devour them. If, in the years that follow, the borings formerly occupied by these insects are used by a colony of ants, they in their turn are dug out and destroyed.

Usually the Woodpeckers nest in excavations in trees which they chisel out themselves. The Flicker's bill is less powerful than those of other members of his family and he takes advantage of natural cavities more frequently than the others. These nests vary in size from the large ones in lofty trees belonging to the powerful Ivory-billed and Pileated Woodpeckers to the tiny home of our familiar Downy. The Gila Woodpecker nearly always selects the giant cactus, the Ivory-billed usually a cypress, but the remainder of the family have no particular preference for the kind of tree. In very thinly wooded or treeless countries the few species of Woodpeckers which occur there are from necessity more or less terrestrial, making their excavations in banks of earth or even depositing their eggs in cavities already existing, such as the brain cavity of the skull of a large mammal. The eggs of Woodpeckers are invariably glossy, immaculate white. They number 4 to 8 and are deposited on small chips at the bottom of the excavation, no attempt being made to construct anything like a true nest.

Most of the Woodpeckers have a wavy, galloping flight, much like that of the Goldfinches.

IVORY-BILLED WOODPECKER

Campephilus principalis (*Linnæus*)

A. O. U. Number 392

Other Names.— Woodcock; Logcock; Woodchuck; Ivory-bill.

General Description.— Length, 21 inches. Plumage, blue-black.

Color.— Adult Male: General color, glossy blue-black, the primaries and tail duller black, or with bluish gloss less distinct; nasal plumes, front of lores, stripe on sides of head and neck (*commencing usually beneath middle of eye* and much narrower on this portion) white, these stripes continued behind along each edge of shoulders; secondaries (except basal portion), terminal portion of primaries (extensively), except five or six outermost, and under wing-coverts, white; sometimes a few feathers on flanks and anal region tipped with white; crest, bright red; bill, ivory-white; iris, clear lemon-yellow; legs and feet light gray, the larger scales paler and somewhat yellowish-gray, the claws pale horn color. Adult Female: Similar in coloration to the adult male, *but crest wholly glossy blue-black.*

Nest and Eggs.— Nest: Usually high up in a cypress; entrance oval. Eggs: 3 to 5, white.

Distribution.— Southeastern United States, north to coast district of North Carolina and in the Mississippi Valley to southern Indiana, southern Illinois, Missouri, Oklahoma, western Kentucky, Arkansas, west to Texas (Brazos and Trinity rivers), south to the Gulf coast, and in Florida to the Big Cypress district south to Caloosahatchie River; now extirpated over much of the greater portion of its former range and existing only in scattered or isolated localities in the lower Mississippi valley and the Gulf States, chiefly in Florida and Alabama.

This magnificent bird is the largest of all the North American Woodpeckers. It is just about the size of a Crow, in fact it is fully four inches longer than the Fish Crow so common along our rivers and coast-line. The most striking feature of its appearance is its head. This is adorned with a bill that resembles a glossy ivory dagger, nearly three inches in length, and the flaming red crest at the back of the head of the male is one of the most animated feathered objects in nature. The Ivory-billed Woodpecker is a bird of astonishing strength and vigor. Often beneath a diseased tree which it has attacked, in quest of boring beetles or insect larvæ, huge piles of bark and slabs of wood are found which give convincing evidence of its power as a feathered axman.

This is a bird of the deep forest solitudes. It is a great traveler and during the course of a day wanders over a vast expanse of territory. Unfortunately for us it has been unable to withstand the advances of civilization even to the extent to which the big Pileated Woodpecker has survived, and to-day it must be numbered among

those species of which we are accustomed to speak as being "nearly extinct." Probably it has entirely disappeared from our southern Atlantic coast, as well as from the Mississippi River country, with the exception of some of the Louisiana swamps. A few still persist in the almost limitless swamps of Florida, but so far as the vision of the average man is concerned, the bird has already gone to join the Dodo and the Great Auk.

Alexander Wilson, writing in the early part of the last century when the Ivory-billed was still found as far north as North Carolina, speaks of a "vulger prejudice" existing in the minds of the people against it. Yet there appears to be little evidence that gunners ever paid any special attention to the bird. Its almost total disappearance, therefore, is not easily explained.

The nesting holes of this species are dug from dead or living trees located far in the most inaccessible regions of the deep cypress swamps. There, too, are the haunts where the bird seeks its food. They are very noisy, and in the nesting season as they chase each other about, or later when the young have left the nest, their loud cries may be heard piercing the swampy gloom for hundreds of yards.

Wilson, writing of one he wounded and confined in his room in a hotel in Wilmington, North Carolina, says: "In less than an hour I returned, and, on opening the door he set up a distressing shout, which appeared to proceed from grief that he had been discovered in his attempts to escape. He had mounted along the side of the window, nearly as high as the ceiling, a little below which he began to break through. The bed was covered with large pieces of plaster, the lath was exposed for at least fifteen inches square, and a hole large enough to admit the fist, opened to the weather-boards; so that, in less than another hour he would certainly have succeeded in making his way through."

The analysis of the food of the Ivory-billed Woodpecker indicates that this species, were it not for its small numbers, might be of considerable economic value. The insects which form the animal portion of its food are mostly of an injurious character. These powerful birds are able to reach the wood-boring grubs in places where smaller species fail and their large bodies require a great quantity of such food. The vegetable portion of their food shows no indication that this Woodpecker is likely to take any products of agriculture. Its shy, retiring habits strengthen this inference.

In his *Food of the Woodpeckers of the United States*, F. E. L. Beal says of the Ivory-bill: "When we see how much good this Woodpecker is capable of doing as a guardian of the forest, it seems deplorable that it should be allowed to be exterminated. Wise legislation, backed by intelligent public opinion, may retard, if not absolutely prevent, the present destruction and allow the bird to regain something of its former abundance. There is room for this splendid species and much need for its services in the great southern forests."

T. Gilbert Pearson.

Drawing by R. I. Brasher

IVORY-BILLED WOODPECKER (¼ nat. size)

The boss carpenter of the bird world — the biggest, handsomest, and rarest of American Woodpeckers

HAIRY WOODPECKER

Dryobates villosus villosus (*Linnæus*)

A. O. U. Number 393 See Color Plate 59

Other Names.— Guinea Woodpecker; Sapsucker or Big Sapsucker (incorrect); Harry.

General Description.— Length, 9½ inches. Upper parts, black and white; under parts, white.

Color.— Adult Male: Crown, uniform glossy blue-black; a band of scarlet on hindhead usually interrupted in middle portion by an extension of the black of crown; rest of upper parts, black, the center of back (broadly) white, the wings (including middle coverts) spotted with white, the spots on greater coverts and wing feathers arranged in regular transverse series; *two outside tail-feathers on each side, entirely white,* the third white except basal portion of inner web, the fourth with greater part of outer web and rear portion of inner web, white; nasal tufts dull white to dull brownish-yellow, the bristly shafts blackish; a broad white stripe above sides of head narrower in front where extending over eye (sometimes confluent with whitish of nasal tufts); a broad white stripe below and back of eye confluent in front with nasal tufts, behind extending to sides of neck; between these two white stripes a broad black stripe involving whole of sides of head and part of region around eye, behind confluent with black of hindneck; a black cheek stripe (usually broken in front by admixture of white), continued and gradually widening behind where confluent with a lateral extension of the black of hindneck, and also sending off a short branch along side of chest; underparts, immaculate white; bill, deep grayish horn color; iris, reddish-brown. Adult Female: Similar to the adult male but *without any red on head.*

Nest and Eggs.— Nest: Generally in a dead tree. Eggs: 4 to 6, white.

Distribution.— Northeastern United States from Nebraska, eastern Colorado, and Oklahoma east to middle and northern parts of Eastern States.

One is tempted to think of the Hairy Woodpecker as but an overgrown Downy, or his big brother. Two and a half inches longer than Downy is our big Hairy of the Trees, and his voice is a big rollicking variation of Downy's, deeper and stronger but with the same happy ring. If one's observation of him is imperfect he might easily be mistaken for Downy, for his manners and coloration pattern are very much like his smaller relative. Not nearly so common as the Downies, the Hairies nevertheless are to be found scattered over about the same area and in the same kind of natural conditions. They are just rare enough so that an enthusiastic bird student hearing the strong call of Hairy will quicken his step and add more alertness to his observation for the pleasure of meeting big Harry again.

Photo by H. K. Job Courtesy of Outing Pub. Co.

HAIRY WOODPECKER

Indulging his craving for meat by investigating a piece of suet tied to a dead branch

In Canada and the northern border of the United States Hairy is over three inches longer than Downy. Here he is called the Northern Hairy (*Dryobates villosus leucomelas*). He seems astonishingly large to the bird-student who finds him far up in the northern forests. Correspondingly small is the Hairy of the Southern States, there called the Southern, or Audubon's, Hairy (*Dryobates villosus audubonì*).

Newfoundland has a Hairy Woodpecker (*Dryobates villosus terrænovæ*) which is intermediate in size between the familiar Hairy and the Northern Hairy; he also has less white on his back and wings.

Western America has four slightly variant forms. The Rocky Mountain Hairy Woodpecker (*Dryobates villosus monticola*) is similar in size to the Northern Hairy but the white spots on the wing coverts are either reduced in size

Courtesy of the New York State Museum

HAIRY WOODPECKER
Dryobates villosus villosus (Linnaeus)
MALE FEMALE

All ¾ nat. size

DOWNY WOODPECKER
Dryobates pubescens medianus (Swainson)
FEMALE MALE

or absent altogether. Harris's Woodpecker (*Dryobates villosus harrisi*) is found along the Pacific coast from Alaska to northern California. Cabanis's Woodpecker (*Dryobates villosus hyloscopus*) lives in the interior districts from northern California, southern Utah, northwestern and central New Mexico, extreme southwestern Texas, south to the mountains of western Mexico. The range of the Queen Charlotte Woodpecker (*Dryobates villosus picoideus*) is limited to the Queen Charlotte Islands, British Columbia. These last three varieties are about an inch smaller than the Northern and Rocky Mountain Hairies, and their differences from one another are comparative.

L. Nelson Nichols.

The Hairy Woodpecker is a bird from which the orchardist and forester have nothing to fear and much to gain. The number of useful insects which he eats is insignificant while the number of destructive larvæ which he devours must have a very great effect in reducing the number of these pests. More than three-fourths of the food of this Woodpecker consists of animal matter and less than a fourth of the remainder is fruit and this is mostly wild fruit. The ratio between the animal food and the vegetable matter does not vary greatly during the year; the wood-boring larvæ upon which this bird so largely feeds can be obtained at all times of the year and the same is true of most of its vegetable food.

Photo by S. A. Lottridge

NEST AND EGGS OF HAIRY WOODPECKER

Section of stub removed

DOWNY WOODPECKER

Dryobates pubescens medianus (*Swainson*)

A. O. U. Number 394c See Color Plate 59

Other Names.— Little Guinea Woodpecker; Little Sapsucker (incorrect); Tommy Woodpecker; Black and White Driller.

General Description.— Length, 6½ inches. Upper parts, black and white; under parts, white.

Color.— Adult Male: Crown, sides of head, center of hindneck, sides of back, shoulders, and upper tail-coverts, black faintly glossed with bluish; four middle tail-feathers, black, without gloss; wings, dull black, passing into dark brownish slaty on primary coverts and terminal portion of primaries, the middle coverts with a rather large roundish spot of white near end and a sub-basal roundish or transverse spot of the same; greater coverts with a roundish sub-terminal spot of white on outer web and a sub-basal roundish spot (concealed) of same on both webs; secondaries crossed by four transverse series of roundish white spots, the first concealed by greater coverts, the last smaller and terminal; outer webs of primaries with similar but more elongate and square spots, about four in number on longest quills besides a smaller terminal spot or margin; a broad center stripe of white on back, this sometimes slightly streaked with black; *two lateral tail-feathers on each side, white, with two broad black bars across rear portion,* the upper one usually broken or interrupted; third feather with rear half of outer web, white, the terminal portion of inner web with one or more broad white bars or spots; nasal tufts, dull white, the bristle-like shafts black terminally; a white stripe over side of head, continued, narrowly, above eye, its rear end in contact with a bright red nape band; a broad stripe of white, extending in front beneath eye, to lores, where confluent with the duller white of nasal tufts, its rear end involving sides of neck; cheeks, grayish intermixed with black in front, continued behind as a gradually widening "solid" black stripe which curves upward

behind the white area and connects with the black of back; under parts, plain dull grayish-white, more whitish on chin and throat, the under tail-coverts usually barred or flecked with black; under wing-coverts, mostly immaculate dull white, but with a black patch; inner webs of wings, dull slaty with large spots of white, except on rear portion of longer primaries; bill, dark horn-grayish; iris, brown or reddish-brown. ADULT FEMALE: Similar to the adult male, but without any red on head, the band replaced by a white one and this usually divided by a center black area.

Nest and Eggs.— NEST: Generally in a dead tree. EGGS: 4 to 6, white.

Distribution.— Northern and central parts of eastern North America from southeastern Alberta, Manitoba, and southern Ungava south to eastern Nebraska, Kansas, and the Potomac valley, and in mountains to North Carolina.

The little black and white Woodpecker of eastern North America has been named the Downy. It is a convenient, homely, and short name for a genial, friendly little bird. Maybe

Photo by H. K. Job Courtesy of Outing Pub. Co.

DOWNY WOODPECKER AT WORK

Tommy Woodpecker would be better, for his boyish, buoyant disposition makes friends for him wherever he goes. He is best known in the open woodland rather than in the dense forest. He seems to be pretty well scattered over the entire area of northeastern America, but never to be very common anywhere. Yet hardly a maple-shaded village, or city park, or farmer's wood lot or thinly timbered swamp but hears the bright, clear, quick, rattling call of little Downy. Watch carefully where the call came from, and he may be seen — or sometimes heard and not seen — tapping into a limb of a tree. Or he may swing down, looping across an open space to another tree that promises another grub or tree parasite. If he is not too busy he will rattle out his joyous call again to whatever ear may hear.

The casual observer who does not handle the birds should not expect to find anything downy about the Downy Woodpecker, or hairy about the Hairy Woodpecker. They are both plain black and white Woodpeckers with ordinary looking feathers when viewed from a short distance. Both the Downy and the Hairy Woodpeckers excavate holes during the fall, in which they pass the winter nights.

There are five other varieties of the Downy scattered over temperate North America: Southern Downy Woodpecker (*Dryobates pubescens pubescens*) in the South Atlantic and Gulf States from North Carolina to eastern Texas; Gairdner's Woodpecker (*Dryobates pubescens gairdneri*) along the Pacific coast from southern British Columbia to northern California;

Photo by S. A. Lottridge

EGGS OF DOWNY WOODPECKER

A section of the stub was removed

Batchelder's Woodpecker (*Dryobates pubescens homorus*) in the mountains from southern British Columbia to New Mexico and Arizona; the Northern, or Nelson's, Downy Woodpecker (*Dryobates pubescens nelsoni*) in northwestern Alaska and southwestern Mackenzie to central Alberta; and the Willow Woodpecker (*Dryobates pubescens turati*) along the coasts and in the valleys of California except on the northwest coast and the desert ranges. The differences between these forms and between them and the common Downy are slight variations in coloration and size. L. Nelson Nichols.

The Downy Woodpecker is one of the fruit-grower's friends. Besides picking up various pests he locates burrows of the flat-headed apple-tree borer and extracts the insects in considerable numbers. He is also an enemy of the codling moth. Caterpillars appear to be a very acceptable food for Downy, as they constitute 16½ per cent. of his yearly diet. A large proportion of them are of the wood-boring species which he digs out of the wood; others are surface feeders which he takes from the leaves and bark.

The proportion between the animal and vegetable parts of the food of the Downy Woodpecker is practically the same as in the case of the Hairy Woodpecker. Less than 6 per cent. of the entire food is fruit and very little of this is cultivated. Grain of all kinds aggregates less than 2 per cent.

The one charge that can be brought against this Woodpecker is that of disseminating the seeds of the poison ivy. These seeds are a favorite winter food for many birds. Unfortunately they germinate freely after they have been voided. Since the insect food eaten by Downy is almost all of harmful species it should be considered fortunate that he can live on this food when it is difficult for him to procure anything else, and his one sin should be forgiven him.

RED-COCKADED WOODPECKER

Dryobates borealis (*Vieillot*)

A. O. U. Number 395

General Description.— Length, 8 inches. Upper parts, black and white, barred; under parts, white.

Color.— Adult Male: Crown, hindneck, lores, and broad cheek stripe, extending behind to sides of neck, where wider than in front, glossy blue-black; nasal tufts, dull whitish; around eye and sides of head white, forming a large patch which extends behind onto sides of neck and in front sends a narrow branch to above middle of eye; *streak of scarlet-vermilion, along side of head* immediately above the white ear area; extreme upper back, sooty black, usually with concealed spots or streaks of whitish; rest of back, together with shoulders, broadly barred with sooty black and white, the two colors equal in extent; upper rump also barred with black and white but less regularly or distinctly; lower rump, upper tail-coverts, and four middle tail-feathers, black; two outer tail feathers white (usually stained), with basal portion of inner web, black, the white portion of inner web with three broad bars or transverse spots of dull black; third tail-feathers with whole, or nearly all, of inner web black, also the basal half of outer web; wings, sooty black, the middle and rear lesser coverts variously spotted with white, the greater coverts with two transverse rows of white spots, the secondaries crossed by four (exposed) narrow bands or broad bars of white; outer webs of primaries (except two outermost) with spots of white; inner webs of wings (except terminal half of longer primaries) with large spots of white; under parts, white, the sides of chest longitudinally spotted or broadly streaked with deep black, the sides, flanks, and under tail-coverts with smaller spots and streaks of dusky; bill, blackish; iris, brown. Adult Female: Similar to the adult male, but without any red streak on sides of head.

Nest and Eggs.— Nest: In a living pine and usually high up. Eggs: 2 to 5, usually 3 or 4, glossy white.

Distribution.— Pine forests of eastern United States, from Florida to eastern Texas; north to central Virginia, eastern Tennessee, western Kentucky, and southeastern Missouri; casually to New Jersey and eastern Pennsylvania.

This is distinctly a bird of the southern United States, not being found north of Virginia or farther west than Oklahoma. It is an inhabitant of the open pine-woods which cover so much of our southern territory, and rarely, if ever, is it met with where the terrain is heavily wooded. In small bands they go trooping through the trees, searching the limbs, twigs, and cones for the insect diet upon which they largely subsist. Rarely will one see them except in the tree-tops,

as they seem to prefer to feed there rather than lower down along the trunks. In general appearance they much resemble the common and familiar Downy, and by many people are often mistaken for this bird. Unlike it, however, they keep well away from human habitations and generally avoid entirely such places as fruit orchards and shade-trees. An easy field mark for distinguishing the two is to be found in the coloring on the head of the males. On the Downy a scarlet band stretches across the nape, while the Red-cockaded rejoices in a small scarlet streak on either side of the back of the head.

The student who goes afield for the first time to study the nesting habits of this bird will find certain surprises awaiting him. To begin with, the nesting cavity is always dug in a living pine tree. Wise lumbermen do not cut a tree that has a nest of this bird in it, for if they do they will have their labor for nothing. The tree has a dead heart. How the little Woodpecker knows this in advance has not yet been revealed. The small entrance-hole goes directly in, usually slanting slightly upward, until the softer dead wood is encountered, then it is dug straight down for about a foot. Here on a bed of fine chips, picked from the side of the hole, the three or four glossy white eggs are laid.

These birds have a strong attachment for their nesting-tree and not only return to it year after year, but will rear their young in the same nest for several consecutive seasons, if the condition of the tree continues to be satisfactory. Sometimes they are not permitted to do this, for along comes that bully of the woods, the Red-bellied Woodpecker, who after enlarging the entrance-hole takes it for his own.

And now comes the most curious habit of this interesting bird. Before a single egg is laid each spring the birds peck hundreds of small holes through the bark about the nest from which the turpentine at once begins to flow. This soon makes a shining, sticky surface all around the tree for two or three feet above the nest and for several feet below it. Why this is done we can only conjecture, although the birds doubtless have a very good reason. It is certainly true that none of the ants that sometimes attack young birds could crawl across this no-man's-land, and it is equally true that the nest will not be troubled by the flying squirrels that are everywhere abundant in the pine-forests of the South.

Of the total food of the Red-cockaded Woodpecker over four-fifths is insects and the remainder is vegetable matter, mostly seeds of conifers. About one-half of 1 per cent. of its whole food is made up of useful beetles. Other items on its meat diet are wood-boring weevils, leaf-eating beetles, ants, bark lice, soldier bugs, caterpillars, crickets, eggs of cockroaches, grasshoppers and spiders. In addition to the conifer seeds it eats seeds of the bayberry, poison ivy, and magnolia and some wild fruits. It does little, if any, damage to the products of husbandry.

T. Gilbert Pearson.

TEXAS WOODPECKER

Dryobates scalaris bairdi (*Malherbe*)

A. O. U. Number 396

Other Names.— Speckle-cheek; Texan Downy.

General Description.— Length, 7½ inches. Upper parts, black and white, barred; under parts, grayish-white.

Color.— Adult Male: Crown, bright red, the feathers dark grayish sooty basally, and with a white spot in middle portion, the red tips gradually increasing in length toward the nape, so that the white spots are concealed behind but exposed on the crown, where also the basal dusky shows; forehead with very little, if any, red, passing into brownish in front; *hindneck, back, shoulders, and rump broadly, sharply, and regularly barred with black and white*, the black bars narrower than the white, and less distinct on rump; shorter upper tail-coverts, black, usually with a white spot or bar; longer upper tail-coverts and four middle tail-feathers, uniform black; lateral pair, brownish-white, crossed by about six broad bars of black, those on basal portion of outer web usually reduced to spots next to shaft; next pair similar, but with about basal half of inner web, uniform black; fourth pair, black with broad white spots, or broadly and irregularly edged with white, on about terminal half of outer web, the inner web sometimes with one to three white spots on terminal portion; wings, black, the middle coverts with a central, usually heart-shaped, spot of white, the lesser coverts (at least the posterior ones) with a smaller and more rounded white central spot, the greater coverts crossed by two transverse series, or bands, of white spots, the secondaries with six similar white bands, the first concealed by greater coverts, the primaries similarly marked; nasal tufts, dull brownish-white to pale brown; broad stripes of brownish-white above and below side of head, extending beneath eye to base of nasal tufts, the two sometimes confluent on side of neck, behind the black ear stripe; cheeks, dull whitish anteriorly, barred

with dusky in front with black behind, where the black is continued backward as a narrow stripe, which usually sends a lateral branch upward to meet the rear end of the black ear stripe; under parts, dull grayish-white, paler on chin and upper throat, flanks, and under tail-coverts, the sides of chest and breast marked with streaks or, usually, drop-shaped spots of black, the sides spotted, the flanks transversely spotted or barred, the under tail-coverts with transverse bars or spots of the same, usually of V-shaped form; under wing-coverts, dull brownish-white, sparsely (sometimes indistinctly) spotted or streaked with black or dusky; inner web of wings dull slate or dusky, with large, roundish spots of white, arranged in transverse series, on inner half of web; bill, horn color; iris, brown. ADULT FEMALE: Similar to the adult male, but without any red, the crown uniform black, passing into sooty brown on front of forehead.

Nest and Eggs.— NEST: In trees, when they are convenient, or in gate-posts or in telegraph or telephone poles. EGGS: 4 or 5, white.

Distribution.— Southeastern California, southern Nevada, Utah, Colorado south to central Texas and northern Mexico.

This is a sort of Downy Woodpecker of the southwestern border. It is perhaps commoner than any other Woodpecker in western Texas, where it is frequently seen in both the hard-wood and the soft-wood timber of the Guadalupe and other mountains. In the hot and arid valleys it is to be found chiefly in the willow, cottonwood, mesquite and yucca growths.

In its appearance it is similar to Nuttall's Woodpecker, though it has no bars on its black middle tail-feathers. In the mountainous country it often associates with the Ant-eating Woodpecker and the Red-shafted Flicker. Its note, though thin and rather weak, is often persistent enough to betray its presence, while its curiosity prompts it to do much peering around tree-trunks at the stranger. Though it nests in trees where suitable ones are available, it frequently sets up housekeeping in telegraph poles or gate posts.

The Texas Woodpecker shows the ruling characteristic of its family in its choice of food, for the largest item is wood-boring beetle larvæ. Next in importance are the caterpillars and these include a number of cotton worms. Ants make up the remainder of its food.

The San Lucas Woodpecker (*Dryobates scalaris lucasanus*) is similar to the Texas Woodpecker except that the outer tail-feathers are barred only on the terminal half. It is found in southern California south to southern Lower California.

NUTTALL'S WOODPECKER

Dryobates nuttalli (*Gambel*)

A. O. U. Number 397

General Description.— Length, 7½ inches. Upper parts, black and white, barred; under parts, white.

Color.— ADULT MALE: Forehead and greater part of *crown, black* conspicuously streaked (except sometimes on forehead) with white, the streaks narrowly wedge-shaped; extreme rear of crown, back of head, nape, and upper hindneck, scarlet-vermilion, this color separated, on each feather, from a dusky basal area by a small V-shaped or drop-shaped spot of whitish; lower hindneck, upper back, lesser wing-coverts, upper tail-coverts, and four middle tail-feathers, uniform black; rest of back, together with shoulders and rump, broadly barred with black and white, the bars of the two colors equal in width; middle and greater wing-coverts, black, the former with a single subterminal roundish spot of white, the latter with two roundish white spots on outer web; wing feathers, black, broadly barred with white, their inner webs with larger roundish spots of the same; outermost feathers, white, with one complete subterminal bar of black and a second incomplete or interrupted bar, the basal portion of inner web usually with some black; next one similar but with more black at base and with second subterminal interrupted bar reduced to a pair of small, widely separated spots, or absent; third with more than basal half black and without second (sometimes without any) subterminal black spot or bar; nasal tufts and front of loral region, dull whitish or light yellowish dusky behind; rear of lores, narrow mouth stripe (extending back beneath eye), a broader stripe on side of head, continued more broadly along sides of neck, together with under parts white, the under parts of body usually tinged with pale brownish buffy; sides of head and broad cheek stripe (the latter continued posteriorly over lower sides of neck, where much expanded), black; sides and flanks, spotted with black, the markings more longitudinal on sides of breast, more transverse on flanks; under tail-coverts, barred or spotted with black; bill, horn color; iris, brown. ADULT FEMALE: Similar to the male, but crown and hindneck uniform black or else (in earlier spring), with very small or scattered white streaks.

Nest and Eggs.— NEST: In dead limbs or old tree-stubs; not far from the ground. EGGS: 4 to 6, white.

Distribution.— California (west of Sierra Nevada), southwestern Oregon and northern Lower California.

All of the climbing birds are, of course, pretty good at climbing, that being their business; but this little Woodpecker has a trick of flying up and lighting on the under side of a limb, and while thus upside down turning around a few times, like an inverted weather-cock, which makes one gasp, and wonder if he has any nerves at all.

Another peculiarity of the bird is his manifest preference for oaks and other deciduous trees, which he frequents virtually to the exclusion of the conifers. The first word of his scientific name *"Dryobates"* is a combination of two Greek words meaning "oak" and "treader"; so literally he and his relatives, the Hairy, Downy, Red-cockaded, and Texas Woodpecker families, are "treaders of oaks."

Of his temperament, Mrs. Bailey gives the following interesting glimpses: "He has the full strength of his convictions and will drive a big Flicker from a sycamore and then stretch up on a branch and call out triumphantly. Two Nuttalls trying to decide whether to fight are an amusing sight. They shake their feathers and scold and dance about as if they were aching to fly at each other, but could not quite make up their minds to so grave a matter."

The bird evidently prefers to attend strictly to business, and is likely to become so absorbed in hammering away at bark or wood where his prey lurks, that often one may approach to within a very short distance without disturbing him. The black crown, the black and white bars on the back (suggesting the American Three-toed Woodpecker), and the white feathers on the sides of the tail are marks by which the bird may easily be identified.

In the mountains of southwestern New Mexico and southern Arizona and south into northwestern Mexico lives another member of the "oak-treader" family. He is known by the name of Arizona Woodpecker (*Dryobates arizonæ*). His upper parts are plain brown except for the red nape. He is a little longer than the Texas Woodpecker.

The animal food of Nuttall's Woodpecker is composed chiefly of insects which are either pests or of no positive benefit. The bird eats some fruit, but this is largely and probably entirely wild varieties. Nothing worse can be said of this bird than that it possibly helps in the distribution of the seeds of poison oak.

Photo by W. L. Finley and H. T. Bohlman

NUTTALL'S WOODPECKER

Practically all the insects which it eats are either pests or of no positive benefit

WHITE-HEADED WOODPECKER

Xenopicus albolarvatus (*Cassin*)

A. O. U. Number 399

General Description.— Length, 8½ inches. Body, black; head, white.

Color.—Adult Male: *Head, all round* (except rear of crown, upper nape, and a streak behind eye) *together with foreneck, plain white,* the nasal tufts tinged with brownish; rear of crown and nape with a band of bright poppy red; rest of plumage, uniform slightly glossy, black, duller black on wings, the primaries extensively white on basal half of both webs, this white extending much farther on outer than on inner web; bill, slate-blackish; iris, brownish-red or dull carmine. Adult Female: Similar to the adult male, but without any red on head or nape.

Nest and Eggs.— Nest: In stub of pine or fir tree, usually from 4 to 15 feet from ground. Eggs: 3 to 7, white.

Distribution.— Cascade and Sierra Nevada Mountains, from southern British Columbia southward through Washington and Oregon to southern California; east to western Idaho and western Nevada.

ARCTIC THREE-TOED WOODPECKER *Picoides arcticus* (Swainson)

FEMALE

MALE

$\frac{4}{7}$ nat. size

The White-headed Woodpecker is a typical bird of the yellow pine timber, ranging from the mountains of southern British Columbia through Oregon and Idaho and especially along the eastern slopes of the Cascades and Sierra Nevadas. The bird gets its food from insects in the bark of the pine, not so much by boring into the tree as by prying off the scales or layers of the bark. many short stubs of small broken branches projecting an inch or two from the main trunk. When the sun is shining, these projections are lighted up in such a manner as to appear quite white at a little distance, and they often cast a shadow resembling the black body of the bird. In winter when a little snow has lodged on these stubs, the resemblance is even greater, and almost

Drawing by R. I. Brasher

WHITE-HEADED WOODPECKER (⅛ nat. size)

A quiet worker among the yellow pine timber

It is a quiet worker and eats a great number of larvæ that tunnel into the bark and the other insects that crawl under the scales of the bark for shelter in winter.

Dr. James C. Merrill says: "One would think that the peculiar coloration of the White-headed Woodpecker would make it very conspicuous and its detection an easy matter, but this is by no means the case, at least about Fort Klamath. On most of the pines in this vicinity there are daily I was misled by this deceptive appearance, either mistaking a stub for a bird or the reverse."

Mrs. Florence Merriam Bailey records much the same experience with this bird. "Impossible as it would seem at first sight, I have found that the snow-white head often serves the bird as a disguise. It is the disguise of color pattern, for the black body seen against a tree trunk becomes one of the black streaks or shadows of the bark, and the white head is cut off as a detached white

spot without bird-like suggestions. On the other hand, when the bird is exploring the light-barked young Shasta firs or gray barkless tracts of old trees, the white of the head tones in with the gray and is lost, the headless back becoming only a shadow or scar. But the most surprising thing of all is to see the sun streaming full on the white head and find that the bird form is lost. The white in this case is so glaring that it fills the eye and carries it over to the light streaks on the bark, making the black sink away as insignificant. All this applies, however, only when the bird is quiet; in motion he is strikingly conspicuous, and in flight his white wing streak makes another good recognition mark."

WILLIAM L. FINLEY.

The most pronounced characteristic of the White-headed Woodpecker is its fondness for the seeds of pines. These constitute more than half of its food. The remainder of its food is insects and half of these are ants.

ARCTIC THREE-TOED WOODPECKER

Picoides arcticus (*Swainson*)

A. O. U. Number 400 See Color Plate 60

Other Name.— Black-backed Three-toed Woodpecker.

General Description.— Length, 9½ inches. Upper parts, black and white, the black predominating; under parts, white.

Color.— ADULT MALE: Crown, bright yellow to orange; rest of head except (usually) extreme front of forehead, hindneck, and sides of neck, uniform glossy blue-black; rest of *upper parts, black,* or sooty-black, the shoulders and back broadly margined with glossy blue-black, the lesser wing-coverts narrowly margined with the same, the middle wing-coverts and upper tail-coverts margined with deeper black than central portion; outer webs of wings, except inner secondaries, spotted with white; four middle tail feathers, black, the next pair mostly black, extremities brownish-white, usually tipped with black, the three lateral pairs mostly white, tinged terminally with brownish; nasal tufts dusky, sometimes finely streaked with paler; extreme front of forehead, usually white, grayish white, or pale grayish, a broad white stripe extending thence across lores and beneath eyes to side of neck; cheeks, black or blue-black, forming a stripe which extends behind across sides of neck, where usually confluent with the black neck area; under parts, white, the sides and flanks broadly barred with black, the bars less regular and sometimes broken into spots or streaks on front of sides; bill, slate color; iris, reddish-brown or chestnut. ADULT FEMALE: Similar to the adult male, but without any yellow on crown, the entire crown being uniform glossy blue-black.

Nest and Eggs.— NEST: In a tree, usually an evergreen, not over 15 feet up. EGGS: 4 to 6, white.

Distribution.— North America; north to central Alaska, Yukon, southern Mackenzie, central Keewatin, and northern Ungava; breeding southward to Maine, New Hampshire, Vermont, northern New York, northern Ontario, northern Michigan, northern Minnesota, Montana, Wyoming, Oregon, and northeastern California; in winter, irregularly southward to Massachusetts, Connecticut, Pennsylvania, southern Ontario, northern Ohio, northeastern Illinois, Wisconsin, eastern Nebraska, and in Sierra Nevada to latitude 39° or farther.

Drawing by R. I. Brasher

ARCTIC THREE-TOED WOODPECKER (½ nat. size)

Too much interested in his own affairs to pay attention to you

The Arctic, or Black-backed, Three-toed Woodpecker is a bird of the northern forests. Observations of this bird are made very rarely except in the belts of spruce and balsam. Even there one is more sure of finding them in the burned areas where the dead stubs rise thirty and more feet high. The bird is never common anywhere. Manly Hardy wrote from Maine to Captain Bendire that this bird "is rarely, if ever, found in any numbers far from burnt tracts; if in green growth, usually singly, or at most in pairs; but on newly burnt lands specimens may be found by the score, and their sharp, shrill *chirk, chirk* can be heard in all directions."

The very rarity of this bird makes the finding of one an event in bird observations. The three toes will not be observed as the bird clings to a tall dead stub or a thick branched spruce, but the plain black back and the yellow front of the head of the male are distinctive.

Courtesy of the New York State Museum

AMERICAN THREE-TOED WOODPECKER *Picoides americanus americanus* Brehm

MALE FEMALE

$\frac{1}{4}$ nat. size

To some the Arctic Woodpecker is a stupid bird, but its lack of fear of hunters and its interest in its own affairs of hunting for worms has made it an easily studied bird in the field. This habit may have tempted many a man with a gun to blaze away at it.

THREE-TOED WOODPECKER

Picoides americanus americanus *Brehm*

A. O. U. Number 401 See Color Plate 61

Other Names.—American Three-toed Woodpecker; White-backed Three-toed Woodpecker; Ladder-back Woodpecker.

General Description.— Length, 8½ inches. Upper parts, black and white — a white line down the back, interrupted with black; under parts, white.

Color.—Adult Male: *Crown, yellow;* forehead, black, spotted with dull white, especially toward the back (next to yellow of crown); rest of crown, lores, around eyes, sides of head, and hindneck, uniform glossy blue-black, sometimes with a narrow streak of white behind the eye, often with whitish spots or streaks on back of head (next to yellow of crown); rest of upper parts, dull black (sometimes forming a rather distinct but broken collar), *back and upper rump barred* or transversely spotted, along center with white, the outer webs of wings also spotted with white, except inner secondaries, the innermost of which have white spots along edge of inner web; two lateral tail-feathers on each side, with terminal half or more white, the third, extensively white terminally, this white stained with brownish, especially on ends; nasal tufts, light grayish-brown, finely streaked with black; a streak or narrow stripe of white around the mouth and passing beneath eyes; beneath this a cheek stripe of glossy blue-black, usually broken by white tips to the feathers; under parts, white, the sides and flanks, broadly barred with black, sides of breast with bars more irregular, sometimes broken into spots and streaks; bill, grayish horn color. Adult Female: Similar to the adult male, but without any yellow on head, the entire crown glossy blue-black, usually streaked or spotted with grayish-white on forehead and crown, but sometimes immaculate.

Nest and Eggs.— Nest: In a tree, usually an evergreen, and not over 12 feet up. Eggs: Usually 4, white.

Distribution.— Northern North America, from central Ungava to northern Minnesota, southern Ontario, northern New York, Maine, and New Hampshire; casual in winter to Massachusetts.

The Ladder-back Woodpeckers are divisible into three regional varieties, the American, the Alaska (*Picoides americanus fasciatus*), and the Alpine (*Picoides americanus dorsalis*). The American Three-toed Woodpecker is a rarer bird in the United States than the Arctic Woodpecker. Far into the Canadian north beyond the Great Slave Lake it becomes the commonest of Woodpeckers. The Alaska Three-toed Woodpecker is not at all common even in Alaska, but it is also rarely found as far south as northwestern Washington. The variety called the Alpine Three-toed Woodpecker is a Rocky Mountain bird from Arizona to Canada, and appears to prefer the pine belts rather than the upper spruce belts.

There have been so few observations of the Ladder-back and so much taken for granted of their calls and customs, that the accounts of their habits are quite confusing. In the Adirondacks Dr. Merriam and Mr. Bagg have made extensive observations. The birds there have nesting holes in any kind of evergreen. The most remarkable characteristic of this bird is that it is non-migratory. Only the Hudsonian Chickadee, Canada Jay and Spruce Grouse are as perfectly non-migratory as the Three-toed Woodpecker.

Quiet as is the Arctic Three-toed, the American Three-toed is even more silent. It might easily be passed by unnoticed by the bird student, anxious though he might be to see a real rarity.

The great bulk of the food of the Three-toed Woodpeckers, both the Arctic Three-toed and the Ladder-backed Three-toed, consists of the larvæ of wood-boring beetles or moths. These are eaten with great regularity throughout the year but more of them in the colder months than in summer. In the dead of winter when all insect life seems to be at a standstill these birds still obtain their daily food. Snugly tucked away in crevices in the bark of trees are the beetles waiting for the return of summer; the larvæ repose in their burrows of solid wood and would seem to be safe from all disturbance; but the Three-toed Woodpeckers are not afraid of cold weather or of hard work and they tear open the hiding places in the bark or chisel into the solid wood and thus get their breakfasts, dinners, and suppers.

YELLOW-BELLIED SAPSUCKER

Sphyrapicus varius varius (*Linnæus*)

A. O. U. Number 402 See Color Plate 62

Other Names.— The Sapsucker; Yellow-bellied Woodpecker; Red-throated Sapsucker.

General Description.— Length, 8½ inches. Upper parts, black barred with brownish-white; lower parts, red, black, and yellow.

Color.—Adult Male: Forehead and *crown, bright poppy-red* or crimson, bordered behind by a crescent of glossy blue-black, extending laterally to above middle of eye; nape (at least laterally) white or brownish-white, rarely tinged with red; back and shoulders, black faintly glossed with greenish blue, broken by heavy spotting of white or brownish white, the white prevailing on sides of back, the black in center; rump and upper tail-coverts, mostly black laterally, mostly white (usually immaculate) centrally; tail, black, the inner web of middle pair of feathers, white with several larger or smaller oblique spots or bars of black, the lateral feathers margined terminally with white (except in abraded plumage); wings, black, the exposed portion of middle coverts and outer web of greater coverts (except inner one), white, *forming a conspicuous longitudinal patch,* the outer webs of primaries and ends of secondaries with large elongated spots of white, the inner secondaries with much white on ends; a broad and sharply defined band of white originating at nasal tufts and extending between eye and cheek regions to sides of neck; a narrower stripe of white behind eye extending to nape; a cheek stripe of black, becoming narrower behind where confluent with a *large crescent-shaped throat patch of uniform glossy blue-black; chin and throat, bright poppy-red,* center under parts, pale yellow; sides and flanks, dull white or brownish white broken by V-shaped markings of blackish; under tail-coverts, white, sometimes with a few shaft-streaks or other markings of blackish; bill, brownish-black; iris, brown. Adult Female: Similar to the adult male, *but chin and throat white instead of red,* and frequently with red of crown reduced in extent, often altogether wanting, the whole forehead, crown, and back of head sometimes uniform glossy black, sometimes with small whitish streaks or arrow-head spots.

Nest and Eggs.— Nest: In dead or decaying tree, 15 to 60, usually 40, feet from ground. Eggs: 4 to 7, white.

Distribution.— Eastern North America, breeding from northern Missouri, northern Indiana, northern Ohio, Massachusetts, etc., north to Mackenzie, central Keewatin, central Quebec, and Cape Breton Island, west to Alberta and southward on Allegheny Mountains to North Carolina; wintering from Pennsylvania, Ohio valley, etc., southward (occasionally farther northward); migrating southward over greater part of Mexico and Central America; also in winter to the Bahamas, Cuba, Jamaica, and the Bermudas; accidental in Greenland and casual in eastern Wyoming and eastern Colorado.

The Yellow-bellied Sapsucker and its western variant, the Red-naped Sapsucker (*Sphyrapicus varius nuchalis*), are the most migratory of all the Woodpeckers. During migration the male birds precede the females. At this period the Sapsucker apparently cares little for insects and he shows that trait of his character which has given him his name by boring numerous rows of holes through the bark of sap trees. Sometimes these holes are merely single punctures but more often a number of punctures are made close together so that squarish spaces are formed nearly half an inch in diameter. Frequently these are placed so near together that their area is greater than that of the remaining bark. Trees thus attacked often die. At this time too, is often heard the bird's snarling and squealing note as he chases his rivals away from the tree which he has selected.

The Downy Woodpecker is often charged with the wrong-doing of the Yellow-bellied Sapsucker; but the truth of the matter is that Downy never makes holes deep enough to draw out the sap, and he doesn't in any way injure the tree.

In the breeding range of the Sapsucker it is an ordinary occurrence for campers to be awakened at break of day by the noise he makes drumming on some dry branch or on some hard dry strip of bark which has a hollow space underneath it. To produce this sound of drumming he braces himself with tail and feet, and stretching backward as far as he can, lets fly his head and neck with all the force of the contracted muscle; this is done so rapidly that his head is practically invisible. This drumming often serves the purpose of a love-song in the mating season.

The mature female Sapsuckers have scarlet crowns, but the young females have black ones and apparently they do not receive their scarlet feathers until after the second summer.

The tongue of the Sapsucker differs from those of the majority of Woodpeckers; it cannot be pushed out as far and the end is brush-like, lacking the sharp points, and is used to sweep in the sap.

Dr. Merriam calls the Sapsuckers "noisy, rollicking fellows"; he was speaking of them in the spring of the year when it is more than

Courtesy of the New York State Museum

Louis Agassiz Fuertes

RED-HEADED WOODPECKER
Melanerpes erythrocephalus (Linnaeus)
ADULT
IMMATURE

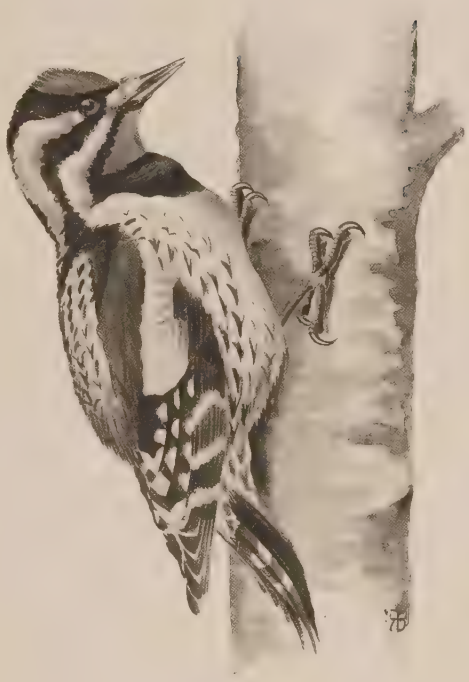
All ½ nat. size

YELLOW-BELLIED SAPSUCKER
Sphyrapicus varius varius (Linnaeus)
FEMALE
MALE

probable that they had become over stimulated from the sap which the heat of the sun had fermented. In the fall they are quiet and reserved.

The Yellow-bellied Sapsucker is one of the few Woodpeckers that have more vegetable matter than animal matter in their diet; the vegetable matter is about 51 per cent. of the total food. The examination of a number of stomachs showed that ants amounted to over 34 per cent. of the whole food. They are evidently a favorite food for they are eaten regularly throughout the year. Bark lice, stink-bugs, spiders, May-flies, sun-flies, grasshoppers, crickets, tree-hoppers, caterpillars and moths constitute the remainder of the animal food. Fruit amounted to 28 per cent. of the total food, but it was probably the wild fruit or berries which had been left on the bushes. Conifer seeds and poison ivy seeds with some rubbish, such as the outer bark of trees, make up about 6 per cent.

While the animal food of this bird should be reckoned in its favor, it must be remembered that the damage it inflicts on trees in eating the sap and the cambium is very serious and is often so extensive that it cannot be balanced by the good that the bird does in other directions. Investigation by the Biological Survey show that the damage to timber, especially in the Southern States, is extensive and serious.



Drawing by R. I. Brasher

YELLOW-BELLIED SAPSUCKER (⅓ nat. size)

A noisy, rollicking fellow

RED-BREASTED SAPSUCKER

Sphyrapicus ruber ruber (*Gmelin*)

A. O. U. Number 403

General Description.— Length, 8½ inches. Head, red; upper parts, black spotted with white; under parts, yellow.

Color.— *Head, neck, and chest, bright red;* nasal tufts, front and lower portion of lores, dull yellowish-white; lores next to eye, black, this sometimes continued, narrowly, along edge of forehead; red below eyes lighter than that of cheeks, the latter blackish at front end; rest of under parts, very pale straw-yellow, the breast washed with bright red, the sides, flanks, and under tail-coverts less yellowish-white, broken by mostly V-shaped markings of dusky grayish; general color of upper parts (except head and neck), black, broken by a double series (converging behind) of white spots down middle of back, *a longitudinal white patch on wing-coverts* (involving most of middle coverts and outer webs of greater coverts) and white spots on outer web of primaries and at tip of inner secondaries, the inner web and tip of upper tail-coverts also white, and inner web of middle pair of feathers with oblique, square spots of white; bill, brownish-black; iris, brown.

Nest and Eggs.— Nest: In an aspen, maple, or willow, 15 to 25 feet from the ground. Eggs: 5 or 6, white.

Distribution.— California; from northern California to mountains of southern California, east to western slope of Sierra Nevada; south in winter to southern Lower California.

Although the Red-breasted Sapsucker nests throughout our Oregon woods, I do not find his home very often. I see more of him through the winter season when he skirmishes about the orchard for food. Last winter I saw one about our place several times. I tried to approach him, but he shied around to the opposite side of the tree and kept peeking around at me in a very

coy manner. Whenever I approached within fifteen or twenty feet, he flitted to the next tree, generally keeping the tree between us.

This Sapsucker sometimes arouses the wrath of the farmer in girdling his trees for sap. There would be less complaint if this red-headed resident stayed more in the woods, but he insists on an occasional tasting of the apple trees. He likes the soft maples, willows, and aspens. These are also his nesting sites. The chips on the ground at the foot of the tree are the surest indication of a nest. The doorway to his home seems very small for the size of the bird. It is from one and one-fourth to one and one-half inches in diameter and at times it is such a close fit that Mrs. Sapsucker can just squeeze in.

Mrs. Florence Merriam Bailey relates a very interesting experience with a mother Sapsucker and her young. "The last week in July at Donner Lake, we found a family of dull colored young going about with their mother, a handsome old bird with dark red head and breast. They flew around in a poplar grove for a while, and then gathered in a clump of willows, where four young clung to the branches and devoted themselves to eating sap. The old bird flew about among them and seemingly cut and scraped off the bark for them, at the same time apparently trying to teach them to eat the sap for themselves; for though she would feed them at other times she refused to feed them there, and apparently watched carefully to see if they knew enough to drink the sap. When the meal was finally over and the birds had flown, we examined the branch and found that lengthwise strips of bark had been cut off, leaving narrow strips like fiddle-strings between. At the freshly cut places the sap exuded as sweet as sugar, ready for the birds to suck." WILLIAM L. FINLEY.

These Woodpeckers do not "suck" the sap, as the quotation from Mrs. Bailey would seem to imply, but sweep it in with their brush-like tongues.

The habits of the Red-breasted Sapsucker vary with the locality. In some places it doesn't seem to indulge in the Yellow-bellied Sapsucker's habit of girdling trees for the sap and the cambium or soft inner bark. Reports from other places say that it does more serious mischief than its relative, fruit trees, especially prune and apricot, and evergreens being frequently killed by reason of its punctures. Ants constitute the largest item of animal food, amounting to 42½ per cent. They are eaten every month in the year except possibly February. Beetles of all kinds amount to 4 per cent. and none of them are useful species. Caterpillars and locusts' eggs are also eaten. Altogether the animal matter amounts to 69 per cent. of the total food.

The Northern Red-breasted Sapsucker (*Sphyrapicus ruber notkensis*) is slightly larger, and its coloration is darker and brighter; the red of the head, neck, and chest averages brighter and the whitish spots on the back are usually smaller — sometimes obsolete. It is found in the coast and forest districts from Alaska to northern California and in winter to southern California.

WILLIAMSON'S SAPSUCKER

Sphyrapicus thyroideus (*Cassin*)

A. O. U. Number 404

Other Names.— Williamson's Woodpecker; Brown-headed Woodpecker (female).

General Description.— Length, 9 inches. MALE: upper parts, black with three white patches; under parts, black and yellow. FEMALE: head brownish-gray; upper parts, black and brownish-gray with white spot; under parts, black, brownish-buffy, and yellow.

Color.— ADULT MALE: *Greater part of head and neck, back, shoulders, chest, and sides of breast uniform, glossy greenish blue-black;* a white stripe behind eye and over the ear, extending to sides of nape, where considerably expanded; a white stripe below eye and under ear originating on and involving nasal tufts and extending to beneath end of ear region; a *center stripe of bright poppy-red on lower chin and upper throat;* abdomen and center of breast, bright sulphur (sometimes nearly lemon) yellow; sides, flanks, and under tail-coverts, white, broadly striped and spotted with black, the markings V-shaped on flanks and under tail-coverts; lower rump and upper tail-coverts, white, the lateral portions of the former and outer webs of latter largely black; tail, black; wings, black, the middle coverts and outer webs of greater coverts (except inner ones), white, *forming a very conspicuous large longitudinal patch on wing,* the second, or third, to fifth primaries (counting from outermost) usually with a

number of small white spots on outer web; bill, black in summer, purplish slaty brown in winter; iris, deep reddish-brown. ADULT FEMALE: Very different from male; crown and hindneck, deep drab, the back of head and nape streaked (sometimes also narrowly barred) with black; back and shoulders, broadly barred with black and pale drab or (in worn summer plumage) dull brownish white, the paler bars usually narrower than the black ones; wings (including coverts) black, barred with pale drab or dull brownish white; rump and upper tail-coverts, white, spotted or barred with black on sides; tail black, the middle feathers crossed with oblique bars of white (at least on inner web), the lateral ones barred with white on ends; sides of head, drab, paler (sometimes whitish) around eyes, the cheeks usually streaked or flecked with black; chin and throat, plain light drab, rarely with a center streak of red; chest, usually barred with black and pale buffy-brown, with a tendency to a black patch, frequently with a large and well-defined patch of unbroken glossy greenish-black, sometimes covering whole throat and foreneck; sides and flanks, regularly barred with black and pale brownish-buffy; abdomen and center portion of breast, immaculate yellow (primrose to nearly lemon-yellow); under tail-coverts, white, with V- or U-shaped bars of black; bill, etc., as in adult male.

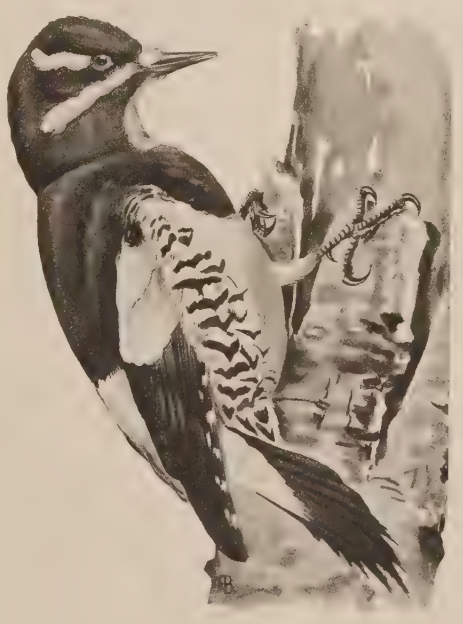
Nest and Eggs.— NEST: In an old tree or stump, usually 5 to 60 feet from the ground. EGGS: 3 to 7, white.

Distribution.— Mountain forests of western North America; breeds from southern British Columbia south to southern California, southern Arizona, and central New Mexico; winters in southern California east to western Texas and south into Mexico.

There are two curious and interesting facts about this handsome bird. The first is that the male is the only one of the four-toed American Woodpeckers who has no red feathers on the top of his head — or his nape. All of the others, from the big Ivory-bill to the little Downy, are more or less red-headed.

The second peculiarity is that for twenty years after their discovery (in 1853), the male and female Williamson's Sapsuckers were duly recorded and gravely described by ornithologists as distinct species, the female under the name of "Brown-headed Woodpecker." It was in 1873 that Henry Henshaw, later chief of the United States Biological Survey, noticed the singular circumstance that the Williamson's Sapsucker and the so-called "Brown-headed Woodpecker" had a way of occupying the same apartments. Now it appears that instead of immediately entertaining visions of complicated hybridization, and conjuring up consequent opportunities to discover "new species," Mr. Henshaw reflected that, as a matter of fact, radical differences between the plumage of the male and the female birds of the same species were so common as to have become commonplace. Wherefore he very reasonably conjectured, and thereafter definitely demonstrated, that the "Brown-headed Woodpecker" was none other than Mrs. Williamson, ornithologically as well as "cohabitologically," and was evidently quite willing so to be and remain. Result: exit one superfluous species; also the shadow of a scandal in birdland.

William L. Sclater says it "appears to be uncertain" whether this bird is actually a "sapsucker," that is, whether it bores holes in the bark of trees for the purpose of getting their sap, as does its eastern namesake, and adds the interesting observations that if it excavates a hole for a nest, it usually selects for that purpose an old pine or spruce tree or a rotten stump; also that apparently it returns for several successive years to this site though a new excavation is made each year. It would be interesting to know



Drawing by R. I. Brasher

WILLIAMSON'S SAPSUCKER (¼ nat. size)

Nature gave the male of this species no red feathers for his head

how Mr. Sclater satisfied himself about the return of the same bird to the same tree, though this does not seem inherently improbable since it has been established that other species of birds

do return, year after year, to the same nesting site. And in the case of this Sapsucker definite identification might be possible through some individual peculiarity if, as Mr. Sclater says, the male does most of the work both of excavation and of incubation. Mr. Sclater also says, "When the female is on the nest, he [the male] sits on a branch nearby and warns her of danger by a special tapping."

The bird's characteristic cry resembles the syllables *huit, huit,* according to one transliteration of them. Generally speaking, the species is rather silent and shy, and is likely to work and stay near the tops of tall trees. Its hammering is less vigorous than that of other Woodpeckers, and is described by Mr. Torrey as "curiously slow, distinctive drum-taps."

The Williamson's Sapsucker eats ants and cambium, the former being the chief item in its animal diet and the latter taking the same place among its vegetable foods. It is of little economic interest except in connection with forests.

PILEATED WOODPECKER

Phlœotomus pileatus pileatus (*Linnæus*)

A. O. U. Number 405 See Color Plate 63

Other Names.— Logcock; Great Black Woodpecker; Cock of the Woods; Wood Hen; Wood Cock; Great God Woodpecker; Good God Woodpecker; Lord God Woodpecker; Wood Kate.

General Description.— Length, 15 to 19 inches. Plumage, slate-black with white and red markings. Head with conspicuous crest; bill, longer than head with wedge-like tip; outer hind toe shorter than outer front toe.

Color.— Adult Male: Crown, including *conspicuous crest, bright poppy-red,* approaching crimson on forehead; a rather narrow stripe of yellowish-white behind eye and beneath this a broad stripe of slate color involving also space below eye (narrowly) and rear of loral region; upper portion of nasal tufts, grayish with terminal portion of bristle-like feathers, blackish, this connected with the slate color around eyes by a narrow line of dusky; lower portion of nasal tufts, dull pale yellowish; a sharply defined stripe along lower portion of lores, dull yellow passing gradually into yellowish-white at rear where forming a broad band beneath the slaty ear area, thence extending downward along side of neck to under wing-coverts, which, together with basal half (approximately) of inner webs of wing feathers, are yellowish-white; cheeks, crimson for greater part, the rear portion, dark slate color or blackish slate; chin and throat, white or yellowish-white, sometimes streaked or suffused behind or centrally with grayish; rest of plumage, plain sooty slate-black or blackish-slate, the under parts slightly lighter; feathers of sides and flanks margined terminally with whitish; basal portion of outer webs of wings, white or yellowish-white, that on secondaries usually concealed by greater coverts, that on primaries showing as a small but distinct area beyond tip of primary coverts; bill, slate color; iris, cream-yellow; naked eye skin, grayish olive; legs and feet with scales black, the interspaces pale gray or whitish. Adult Female: Similar to the adult male, *but forehead and front half of crown, grayish-brown or olive and cheek region slate color.*

Nest and Eggs.— Nest: In a dead tree or tall stump, occasionally in the solid trunk of a living tree, usually a coniferous tree, 12 to 80, usually 40 to 50, feet from the ground. Eggs: 3 to 6, white.

Distribution.— Wooded regions of North America, mainly east of the Rocky Mountains.

Next to the rare Ivory-billed, this is the largest of all North American Woodpeckers. Formerly the birds were of wide distribution in the heavily wooded sections of the country, but they have now disappeared from many parts of the eastern United States. When found they are usually in regions of original forest growth, rarely being seen where the woods have been once cut over. The nest of this species is excavated in a dead tree or tall stump, occasionally a living tree is used if a knot-hole or dead spot affords a convenient place in which to begin to dig. Not infrequently the hole is dug to a depth of three feet or more. To perform such a task requires time, and often as much as a month must pass before the two birds working alternately are able to complete their enterprise. I have found their nests at distances varying from eighteen to

Courtesy of the New York State Museum

NORTHERN PILEATED WOODPECKER *Phlocotomus pileatus abieticola* (Bangs)

MALE FEMALE

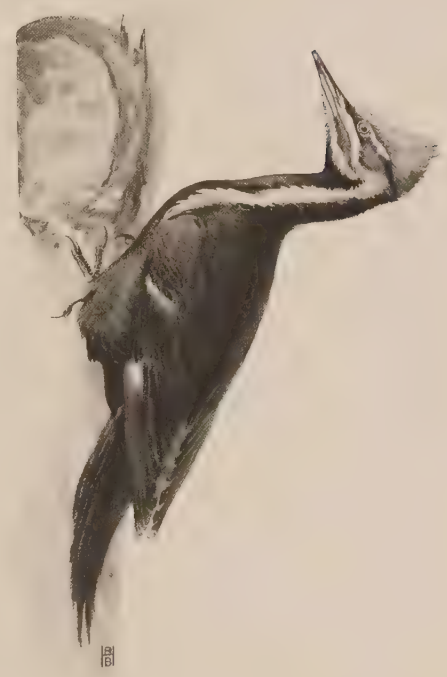
About ½ nat. size

seventy feet from the ground. These holes, after being abandoned, are a great boon to hole-nesting birds that are not able to excavate hollows of their own. Screech Owls, Sparrow Hawks, and Wood Ducks thus prosper by the industry of their Woodpecker neighbors. From three to six pure white eggs are laid on a bed of fine chipped-off fragments of wood.

Pileated Woodpeckers frequently show an absence of fear of man which one would not expect in a bird that is so distinctly a forest-dweller. Thus, when there are heavy growths of original woods near a village, they will at times come close about houses provided these are surrounded by large old trees. While camping in the hammocks of central Florida, I have now and then walked up to within thirty yards of a Pileated Woodpecker busy at work on some rotting log, without the bird paying the slightest attention to my presence.

As this Woodpecker seems not to possess the faculty of adapting itself to the new conditions created by civilization, it is quite possible that it will not long survive the passing of our primeval forests. T. Gilbert Pearson.

The food of the Pileated Woodpecker does not interest the farmer or horticulturist for it is obtained entirely from the forest. The bird does not visit the orchard or the grain field, but all of its work in the forest helps to conserve timber. Its animal food consists probably of beetles and ants and its vegetable food of wild fruits.



Drawing by R. Bruce Horsfall

PILEATED WOODPECKER (⅛ nat. size)

As the forests are cut down, this Woodpecker disappears from its old haunts

RED-HEADED WOODPECKER

Melanerpes erythrocephalus (*Linnæus*)

A. O. U. Number 406 See Color Plate 62

Other Names.— Redhead; Tricolor; Tri-colored Woodpecker; White-shirt; Jellycoat; Shirt-tail; Patriotic Bird; Flag Bird.

General Description.— Length, 9 inches. Head, red; back, black with white patches; under parts, white.

Color.— Adults: *Head, neck, and upper chest, uniform bright crimson,* margined behind by a distinct, (usually more or less concealed) semi-circular band of black across chest; back and shoulders, uniform glossy blue-black, the wing-coverts, black margined with glossy blue-black; primary coverts, primaries, and tail, uniform black, the latter (except two to four middle feathers) tipped with white, the outside pair sometimes edged with white; rump, upper tail-coverts, secondaries, and under wing-coverts (except along margin of wing), uniform pure white, the secondaries with shafts and basal portion (mostly concealed), black; under parts below upper chest, white, the abdomen tinged with dull yellowish or salmon color, sometimes with bright red; bill, bluish-white; iris, deep brown or reddish-brown. Young: Very different from adults; *head, neck, and upper chest, brownish-gray,* streaked or spotted with black, sometimes suffused or intermixed with red on hindneck or on sides of head; back, shoulders, and wing-coverts, black, the feathers margined with pale gray; secondaries, white with one or two broad bands of black (sometimes interrupted) on extremities; under parts, below chest, dull white to very pale brownish-gray, the sides and flanks (especially the latter), sometimes also the breast, streaked with dusky; otherwise much as in adults.

Nest and Eggs.— NEST: Generally in a dead tree but sometimes in a living tree, telegraph pole, or fence post. EGGS: 4 to 6, white.

Distribution.— Eastern United States and British provinces from southeastern British Columbia, Wyoming, Colorado, and Texas, east to the Atlantic coast; north, regularly, to northern New York (breeding in Adirondack region), Ontario, Manitoba, central Alberta, and southwestern Saskatchewan (rare); south to southern Florida and Gulf coast to Texas; rare and local east of the Hudson, where breeding, however, north to Vermont; casual in Nova Scotia, New Brunswick, Utah, New Mexico, and Arizona; irregularly migratory in northern parts of its range.

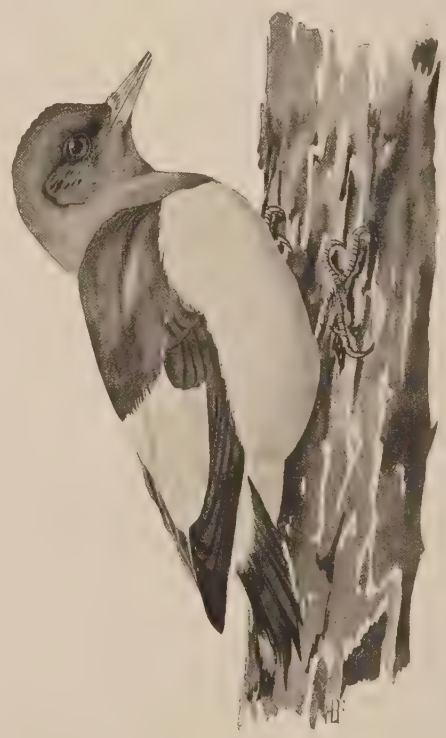
With the exception of the Flicker the Red-headed Woodpecker is more often seen in the open than any other Woodpecker. His favorite places seem to be the dead tops of forest trees and tracts of forest that have been burned leaving only dead stubs. Lacking these natural sites he will build his home in telegraph poles, fence posts, and similar places.

The Red-headed Woodpecker adds grasshoppers and flies to the regular Woodpecker diet. When he sees a grasshopper he wants he springs upon it and then, unlike the Flicker who remains on the ground hopping about, he returns to his look-out station on the dead stub or fence post. He will pursue a fly for some distance through the air, and having caught it he again returns to his original position to wait for another.

The Red-headed Woodpecker is very fond of beech nuts and other mast. Years in which such food is plentiful he will lay away in the crevices of trees a supply for the winter and it seems to make no difference to him whether later on he eats these same nuts or whether he eats the grubs which have discovered his pantry. Whether or not he spends the winter in the same place where he has passed the summer seems to depend upon the supply of mast.

This member of the Woodpecker family is more noisy than his relatives. Mr. Dawson thus describes this characteristic: "The woods and groves resound with their loud calls, *Quee-o — quee-o—queer.* These *queer* cries are not unpleasant. When one of them flies into a tree where others are gathered, all set up an outcry of *yarrow, yarrow, yarrow,* which does not subside until the newcomer has had time to shake hands all around at least twice. Besides these more familiar sounds the Red-heads boast an unfathomed repertory of chirping, cackling, and raucous noises. The youngsters, especially — awkward, saucy fellows that most of them are — sometimes get together and raise a fearful racket until some of the older ones, out-stentored, interpose."

The red, white, and black of the plumage of this Woodpecker are striking marks. In certain lights the black shows a bluish tint and it is not unusual to hear that a red, white, and blue bird has been seen. This coloration has earned for Red-head the names of "Patriotic Bird" and "Flag Bird." Mrs. Mabel Osgood Wright says



Drawing by R. I. Brasher

RED-HEADED WOODPECKER (⅓ nat. size)

"He wears the German flag."—Mrs. Wright

that "he is an unmistakable bird, when you are lucky enough to see him, for he boldly wears the German flag in his red, white, and black feathers." Like other highly colored birds he has paid the usual toll to gunners.

No species of Woodpecker in this country, with the possible exception of the Yellow-bellied Sapsucker, has been the subject of so much adverse criticism as the Red-head. It has been

accused of eating nearly every variety of cultivated fruit from strawberries to oranges, of pecking corn from the ear, of eating the eggs of poultry and pigeons, of pecking open the skulls and devouring the brains of young poultry, and of destroying the eggs or young of Eave Swallows and other birds. These accusations are well grounded, but the habits are probably only local. These reports have been received from hundreds of localities, but in thousands of other places where the bird abounds no such acts have been observed. Stomach examination confirms to some extent the corn-eating habit, and to a less degree the fruit-eating, but fails entirely to show that the bird habitually eats young birds or eggs. Where this bird has done appreciable harm, it has probably been due to new and unusual conditions likely to be temporary. In its animal food the Red-head does a little harm theoretically by its destruction of predatory beetles, but the harmful species eaten are enough to balance this. On the whole, there seems to be no reason to condemn this Woodpecker except under very unusual conditions. J. Ellis Burdick.

Photo by Alice H. Olds Courtesy of Nat. Asso. Aud. Soc.

RED-HEADED WOODPECKER

Feeding on the railing of veranda

ANT-EATING WOODPECKER

Melanerpes formicivorus formicivorus (*Swainson*)

A. O. U. Number 407

General Description.— Length, 9½ inches. Upper parts, green; under parts, black, green, and white.

Color.— Adult Male: Nasal tufts, front of cheeks, chin, and upper throat, black; forehead and rather narrow band across front of lores to middle or rear of cheeks white; passing into pale sulphur-yellow on lower throat and foreneck; crown, back of head, and nape, bright poppy-red; span around eyes, sides of head, sides of neck, upper chest, lower hind-neck, back, and shoulders, plain glossy greenish blue-black; wings, black or brownish-black, the coverts margined with glossy greenish blue-black, the primaries (except three or four outermost) with a basal patch of white, occupying both webs (but interrupted by the black shaft), this white area broader on inner quills; rump and upper tail-coverts, immaculate white; tail, entirely black; lower *chest and sides of upper breast, glossy greenish blue-black streaked with white* (the upper chest also sometimes streaked, at least in center) the remaining under parts, white, the lower breast (except centrally), sides, and flanks streaked with black, the under tail-coverts with narrow shaft-streaks of the same; bill, black; iris, variable in color (pinkish, white, bluish, brownish, or yellow). Adult Female: Similar to the adult male, *but crown glossy greenish blue-black.*

Nest and Eggs.— Nest: Usually in an oak or a pine tree. Eggs: 4 or 5, white.

Distribution.—Western North America from Oregon and western Texas to Panama.

The Ant-eating Woodpecker and its larger brother, the California Woodpecker (*Melanerpes formicivorus bairdi*), conspicuous and gay in their scarlet caps, glossy blue-black coats, and black and white striped waistcoats, are famous for their curious habit of boring holes in trees (often a dead redwood) and filling the holes with acorns. So zealous are these birds, that often when trees in the proper condition for puncturing are not numerous enough, they attack buildings and drill holes in the corners of houses or in the spires of churches. Telegraph and telephone poles and fence-posts are often used as an outlet for their energies.

This habit presents several interesting aspects. In the first place, and from the purely mechanical viewpoint, it is noticeable that the birds evidently have an accurate idea of the necessary relationship between the size of the hole and the size of the acorn. Now, a mouse has been known to struggle long and patiently at the impossible task of pushing or pulling through a hole in a wall, a walnut which was larger than the hole. And with all his general intelligence, a dog will try and keep on trying to fetch through a paling fence a stick much longer than the space between the palings. On the other hand, the House Wren and other birds which build in

cavities with comparatively small openings will get long grasses and feathers for their nest through the opening by the, to us, obvious expedient of pushing or pulling them through lengthwise. The significance of all this is not that the Woodpecker and the Wren are naturally wiser or more intelligent than the dog or the mouse, but that the birds are performing an act learned by ages of experience, and now virtually instinctive, whereas the mouse and the dog fail because the problem which confronts them is essentially a new one, and too deep for their natural wit to solve.

Another puzzling aspect of this practice of the Ant-eating Woodpecker is the apparent lack of any sufficient reason for it. It has been suggested that the habit was born of necessity, that necessity arising from the fact that the habitat of the bird is also the habitat of multitudes of ground squirrels, who devour so many acorns that there are not enough left for the Woodpeckers, wherefore they lay away supplies out of reach of the squirrels. But it may fairly be doubted, as a matter of fact, whether the numbers and appetite of the squirrels are together sufficient to threaten any such famine.

Another explanation is that the Woodpeckers store the acorns not because they expect to eat them, but because they know that in time the nuts will rot and in that condition attract insects upon which they may feed. This solution, however, sounds more like the product of a fertile and active imagination than the result of responsible observation and clear-headed reasoning. What can Woodpeckers know about the laws and consequences of decay in the vegetable world? And how does it happen that this particular species, living in a land of unfailing plenty of all kinds of bird food, should have acquired this special knowledge, while their relatives who inhabit regions where food is actually scarce and hard to get show no such wisdom or foresight?

Whatever may be the cause and purpose of this storing habit, it results in much quarreling between the Woodpeckers and the squirrels, Jays, and other thieves in fur or feathers who steal the cached acorns. And even man has been known to put himself in the same category with the pilferers, by replenishing the feed supply for his horses from the Woodpecker's stores. From all this it must not be inferred that these birds subsist entirely on acorns, for insects form a considerable part of their diet, and many of these they take on the wing after the manner of the Red-headed species of the central States.

In flight this Woodpecker may readily be identified by the white patches on its wings and rump. The characteristic call suggests the syllables *ja-cob,* reiterated as the birds fly from tree to tree, and is soft and musical in its quality.

The food of the Ant-eating and California Woodpeckers is not of much economic importance. They cannot be charged with destroying useful insects or many products of husbandry. While they eat considerable fruit, especially almonds, in fact twice as much as the Linnet, they do not habitually infest orchards, and in most localities are not numerous enough to be a serious nuisance. The few insects which they take are nearly all of harmful species, while the acorns which make up the bulk of their diet may be considered of little value. The trees used for storehouses are usually either dead or partly so, and when alive are little harmed by the punctures, which do not usually go through the bark. When, however, holes are made in buildings, telegraph or telephone poles, or fences, they are a real injury, and it is fortunate that such cases are local and exceptional. From the esthetic point of view, however, a strong plea for their protection may be made. It is an interesting and picturesque species, and where they do not make themselves conspicuous by reason of the damage they do they may well be allowed to live.

LEWIS'S WOODPECKER

Asyndesmus lewisi *Riley*

A. O. U. Number 408

Other Names.— Black Woodpecker; Crow Woodpecker.

General Description.— Length, 10½ inches. Upper parts, greenish-black; under parts, gray and red.

Color.— Forehead, lores, around eyes, front half of sides of head, cheeks, chin, and upper throat, dark crimson; rest of head (except lower throat), nape, and upper parts generally, together with rear flanks and under tail-coverts, plain glossy greenish black, the back and shoulders, more bronzy; lower throat, dull black,

the feathers (except on upper portion) tipped with pale gray, the foreneck similar, but with much broader pale gray tips; *chest and a broad, sharply defined collar around hindneck, light silvery gray;* breast, abdomen, sides, and greater part of flanks light crimson, intermixed (in fine longitudinal lines or streaks) with pale silvery gray or white, especially on breast, where the reddish color is paler and less strongly contrasted with the pale gray of the chest; under surface of wings and tail, uniform black, faintly glossed with bronzy greenish, at least on under wing-coverts; bill, dull black or dusky; iris, brown.

Nest and Eggs.— NEST: Usually in a natural tree-cavity, or in the deserted hole of some other bird. EGGS: 6 or 7, white.

Distribution.— Western North America, from southern British Columbia and southern Alberta, south to southern Arizona and New Mexico and Western Texas; west to interior valleys and coast ranges of California; east (regularly) to Black Hills of South Dakota, western Nebraska, western Kansas, eastern Colorado, etc.; casually to eastern Kansas and Oklahoma; in winter to southern California, western Texas, and northern Mexico.

Lewis's Woodpecker was one of the birds discovered on the Lewis and Clark expedition and was named in honor of Lewis. In various and interesting respects, he is a decidedly un-woodpecker-like Woodpecker. To begin with, instead of galloping through the air in the undulatory flight of most of his tribe, he is likely to proceed by regular and rather heavy wing-beats, resembling those of the Crow. (On the Pacific coast he is called the Crow Woodpecker.) Again, instead of alighting right-side-up-with-care on the side of a perpendicular tree-trunk or limb, he is likely to land crosswise, on a horizontal limb, like any perching bird. Furthermore, though two or three of his cousins catch flies on the wing, this bird goes on regular aërial cruises after the insects, sailing around, for several minutes at a time, or sometimes darting straight upward high above the tree-tops, and apparently making many captures before returning to his perch.

Perhaps as a result of these habits the bird seems to forget what he is, a good deal of the time, and does comparatively little of the hammering work a real Woodpecker is expected to do. Remembering this we are not surprised to learn that he seldom, if ever, builds, or rather digs, his own house, but occupies the deserted homes of other members of his tribe, or even natural cavities in trees, the last a performance which must make his relatives wag their heads and mutter remarks about degeneracy.

The common Flicker is sometimes seen on the ground where he is most likely to be engaged in probing ant-hills with his long bill, but Lewis's Woodpecker feeds freely on the ground, where he captures crickets, beetles, grasshoppers and various other insects. In this feeding, presumably he finds especially convenient one of his physical peculiarities, which is his ability to raise his upper mandible for about a quarter of an inch without moving his jaws.

Again, this species seems to have developed in some degree the hoarding trait which is so strongly marked in the Ant-eating Woodpecker, for he has been observed stuffing acorns, after having shelled them, into natural cavities in cottonwood trees. Examination of some of these caches showed that they were mere pockets, but that they had been jammed full to their capacity of five or six acorns. Moreover, Mrs. Fanny Hardy Eckstorm, in her book about Woodpeckers, records the interesting and perhaps significant observation that in the San Bernardino Mountains of California this bird has been seen to drive the California Woodpecker away from a tree whose bark he had perforated for storing acorns, and attempt, somewhat clumsily, to do the storing act himself in the holes which the other bird had dug. The possible significance of this hoarding performance is that it may mark the beginning of a trait which hereafter will become a fixed characteristic.

Another un-woodpecker-like habit of this species is that of gathering in large flocks, like Starlings, especially in the mating season. Though at other times the bird is generally very quiet, in this flocking period he is quite noisy, uttering frequently an unmusical and rather rasping call.

While Lewis's Woodpecker eats some useful beetles probably he does no serious harm in this way. His vegetable food amounts to over 60 per cent. of his entire food for the year. He doesn't seem to care much for grain and is not likely to do any harm in that direction. However, he has a pronounced taste for fruit. His shy habits force him to satisfy its craving by wild species; he does not visit the orchard and cultivated areas unless these places are situated in lonely spots. Mr. William L. Finley reports that during cherry season he has often seen this bird carrying cherries to its young in the nest, just as the Robin does; the parent, as a rule, carried the cherry by the stem. (MS.)

An incident of interest is reported from one of the northwestern States. On one side of the river was a large area of wild land and directly

opposite was an orchard. Lewis's Woodpeckers persistently visited the orchard when the early apples were ripening. One evening a number of boxes were filled ready for market and were left in the orchard. In the morning it was found that the Woodpeckers had pulled out the papers and pecked the fruit so that it was necessary to open and repack several boxes. The moral in this incident is that the fruit-grower should be careful to leave wild fruit-bearing shrubs and trees around his orchard because when these birds cannot satisfy their desire with the fruit they have been accustomed to, they will without doubt turn to cultivated fruits.

RED-BELLIED WOODPECKER

Centurus carolinus (*Linnæus*)

A. O. U. Number 409 See Color Plate 64

Other Names.— Zebra Bird; Zebra-back; Chad; Shamshack; Ramshack.

General Description.— Length, 9½ inches. Head, red; upper parts, black with narrow white bars; under parts, gray and red.

Color.— Adult Male: Forehead and nasal tufts, light red, the latter usually paler (sometimes dull whitish) in front; crown, back of head, and hindneck, bright poppy-red, more scarlet on hindneck; back and shoulders, regularly and sharply barred with black and white, the white bars usually rather narrower than the black, the wing-coverts similarly barred but white bars relatively narrower, the secondaries also with broad white bars changing to spots on the end quills; primaries and primary coverts, black, the former blotched with white sub-basally, the longer quills (except outermost) narrowly edged with white at ends (except in worn plumage), the others tipped or broadly margined at tip with white; upper rump, barred with black and white, but bars less sharply defined than on back; lower rump, white, usually barred, spotted, or broadly streaked with black (rarely immaculate); upper tail-coverts, white, often immaculate, but (usually) with a narrow shaft-streak of black, at least basally; tail, black, the inner web of middle pair of feathers, white with bars or transverse spots of black (exceedingly variable as to number, size, etc.), the outer web usually with a wedge-shaped longitudinal streak of white on basal half, at least, the lateral feathers tipped with white and with broad (usually interrupted) bars of white on extremities; lores, over and behind eye, side of head, and cheeks, pale buffy-grayish, usually tinged

Drawing by R. I. Brasher

RED-BELLIED WOODPECKER (½ nat. size)

A beneficial tree surgeon

with pale red (sometimes wholly pale red, like frontal region); chin and upper throat, similar but paler (sometimes pale red or tinged with the same), passing behind into pale yellowish smoke-grayish on chest, breast, and sides; middle of abdomen, red, this color sometimes tingeing the breast, etc.; flanks and under tail-coverts, white, barred or streaked with black or with V-shaped markings of the same, the white ground color usually tinged with dull yellowish; bill, blackish or slate-blackish; iris, varying from ferruginous to scarlet. ADULT FEMALE: Similar to the adult male, but *the red of the head restricted to the back of head* and red of abdomen usually much paler as well as more restricted.

Nest and Eggs.— NEST: Usually in a dead limb or tree 15 to 60 feet from ground. EGGS: 3 to 6, usually 4 or 5, white.

Distribution.— Eastern United States; north, regularly, to Delaware, central and western New York, southwestern Ontario, southern Michigan, southern Wisconsin, and southeastern Minnesota, irregularly or casually to northern New York, Connecticut, and Massachusetts; west to southeastern South Dakota, eastern Nebraska, eastern Kansas, Oklahoma, west central Texas, etc., casually to Colorado; south to southern Florida and along Gulf coast to central Texas; accidental in Arizona.

In many parts of the United States all the Woodpeckers that have a plumage mainly black, and more or less spotted with white, are collectively called "Sapsuckers." The Red-bellied Woodpecker is one of several species to which this name is incorrectly applied; Chad is also a common appellation in some of the middle western States. In the South, where apparently it reaches its greatest abundance, the bird is constantly met with, whether one journeys through the pine barrens, or among the heavy growths of deciduous trees that constitute the "hammocks" surrounding many of the ponds and lakes. It is a bird equally at home in the unbroken forests or about the plantations wherever trees are found. In flight it exhibits to some extent the characteristic galloping, undulating movement peculiar to most members of the family, and upon alighting often gives voice to the harsh, brassy cry of *chad, chad,* from which one of its local names has been acquired.

The nest is of the usual Woodpecker type, being made in a hole excavated generally in a dead tree or limb. Sometimes a pair will take possession of a cavity already completed by some other Woodpecker, and while such action may involve a moral question, it at least indicates a disposition to conserve physical effort which by many is to-day rated high among the vital resources of our country.

Only one element in the food of the Red-bellied Woodpecker has much economic significance. The bird evinces a decided taste for fruit, and sometimes injures orchards, as in Florida orange groves. On several occasions, when in that State, I have seen these birds engaged in eating oranges still on the trees. The contents of the stomachs examined by the Biological Survey, however, show that wild fruits are the favorites, and probably only when these have been replaced by cultivated ones is any mischief done. Orange pulp was not positively identified in any stomach, though quite a number were collected in Florida during the orange season. Only a little of the grain eaten is taken when it is a loss to the farmer. In its animal food the bird is almost entirely beneficial, as the insects eaten are largely noxious. T. GILBERT PEARSON.

GOLDEN-FRONTED WOODPECKER

Centurus aurifrons (*Wagler*)

A. O. U. Number 410

Other Name.— Golden-front.

General Description.— Length, 10 inches. Head, yellow[1]; upper parts, black and white, barred; under parts, gray and light yellow.

Color.— ADULT MALE: Front portion of forehead, cadmium yellow, rear of forehead and front portion of the space over the eye, dull buffy grayish-white, passing into mouse-gray on sides and back of head, *this enclosing a crown-patch of bright poppy-red;* hindneck, bright orange (sometimes tinged with orange-red) in front, passing into yellow or yellowish-orange behind; back, shoulders, and upper rump, regularly and sharply barred with black and white, the wing-coverts and secondaries similarly barred, but the white bars relatively narrower; primary coverts and primaries, black, the latter with a white sub-basal patch and, except outermost quills, tipped with white; lower rump and upper tail-coverts, immaculate white; tail, black, the lateral feathers tipped with white, the outermost pair with several white spots or indentations along edge of

rear portion of outer web, sometimes with one or more similar spots or bars on subterminal portion of inner web; sides of head, sides of neck, chest, breast, and sides, plain pale buffy-grayish, fading into paler (sometimes dull whitish) on chin, front portion of cheeks, and in front of eyes and passing into light yellow on abdomen; flanks and under tail-coverts, white, spotted or barred with black, the markings usually of V-shaped form; bill, dull black or slate-black. ADULT FEMALE: Similar to the adult male, *but without any red on head,* the back of the head and the whole crown, gray, the color fading from rather deep gray on the back of the head to pale buffy grayish or dull whitish on forehead, the yellow of hindneck rather paler than in male and, usually at least, without orange tinge, and yellow of abdomen paler, as well as more restricted.

Nest and Eggs.— NEST: Usually in mesquites, pecans, oaks, or telegraph poles. EGGS: 4 to 7, white.

Distribution.— Central northern Texas, south to Valley of Mexico.

Similar in habits to the Red-bellied Woodpecker is the Golden-fronted Woodpecker of Texas and northern Mexico. Along the Rio Grande the birds have been observed to make nesting holes most often in mesquite. Farther up in the State the practice of boring holes in the telegraph poles has become in many cases a serious matter as, not content with one nesting hole a year, each pair will often dig out two or more holes. Yet farther south on the mesquite prairies the birds are known to use one nesting hole year after year. Sometimes these Woodpeckers will make their home in a bird-box near a house.

The Golden-fronts are noisy and conspicuous birds. They do not recognize man as an enemy, and their lack of fear has cost many of them their lives to fill pot-pies.

The Golden-fronted Woodpecker shows a decided taste for grasshoppers which make up half of its animal food. Its vegetable diet is composed almost entirely of small fruits or berries.

GILA WOODPECKER

Centurus uropygialis *Baird*

A. O. U. Number 411

Other Name.— Saguaro Woodpecker.

General Description.— Length, 9 inches. Head and under parts, drab; upper parts, black and white.

Color.— ADULT MALE: Head, neck, and most of under parts plain drab, darkest on hindneck, palest on chin, forehead, and nasal tufts; crown with a broad center patch of bright scarlet vermilion; back, shoulders, and *upper rump, regularly, sharply, and rather broadly barred with black and white,* the white bars, which are usually tinged with pale brownish-buffy, are usually slightly narrower than the black ones; lower rump and upper tail-coverts white, barred (sometimes narrowly) with black, those on upper tail-coverts usually V- or brace-shaped; tail, black, the inner web of middle pair of feathers white (except terminally) broadly barred with black, the outer web with a wedge-shaped streak of white, extending half way down, the outermost pair crossed for most of their length by broad, interrupted, bars of white, the next pair with similar markings on extremities; wings, black, the coverts and secondaries barred with pure white (the bars narrower on coverts, much broader on secondaries), the primaries with a large, broken, patch of white on sub-basal portion of outer webs, the inner quills with a terminal spot or edging of white; abdomen, light saffron-yellow; flanks and under tail-coverts, dull white or yellowish-white, barred with black, the bars usually somewhat V-shaped, at least on coverts; bill, dull black or slate-black. ADULT FEMALE: Similar to the adult male *but no red spot on crown,* which is wholly light drab (like general color of head, neck, and under parts), and yellow of abdomen paler and more restricted.

Nest and Eggs.— NEST: Generally in the giant cactus, but sometimes in a cottonwood, a sycamore, or a mesquite. EGGS: 3 to 5, white.

Distribution.— From the Colorado valley in southeastern California and the extreme southeastern corner of Nevada east through southern Arizona and southwestern New Mexico, and south through Lower California and western Mexico.

The peculiarity of the Gila Woodpecker is its apparent preference for the stem of the giant cactus as a home-site. Literal-minded persons may, therefore, contend that to this extent the bird isn't a Woodpecker at all, since the cactus plant does not produce wood. To which it may

Courtesy of the New York State Museum

NORTHERN FLICKER *Colaptes auratus luteus* Bangs

FEMALE MALE

RED-BELLIED WOODPECKER *Centurus carolinus* (Linnaeus)

FEMALE MALE

½ nat. size

be replied, with equal seriousness and profundity, that since the bird lives in a country which grows little wood, there is little wood to peck, but from the fact that it pecks the nearest substitute for wood that is available we are justified in concluding that it would peck wood if it could, and therefore, is at heart a Woodpecker. At any rate, the habit has real significance in so far as it bespeaks the persistence of instinct operating through native adaptability, which may be considered a form of intelligence.

It is, of course, comparatively easy for the Gila to make a way through the fiber of the cactus. The pith is cut away to the proper depth, and a chamber of suitable dimensions is hollowed out. In the operation the bird's plumage becomes more or less daubed with sap, but that doesn't seem to bother him. At the entrance and inside the cavity the fluid soon hardens, and the passage-way and chamber become as dry as if they were cut out of solid wood. In the region inhabited by these birds, many, if not most, of the giant cactus stems show one or even several of these nesting holes.

The other habits of the Gila Woodpecker are similar to those of the Ant-eating species, with the important exception that it does not seem to practice hoarding food. It feeds largely on insects, captured in foliage or on the wing, which diet is varied by mistletoe and other berries. It is often seen feeding on the ground in cornfields.

In the report of Mr. F. E. L. Beal, of the United States Biological Survey, on the food of Woodpeckers he says that but one stomach of the Gila Woodpecker had been examined and this was largely filled with beetles of the May-beetle family with a few bones of a lizard. The vegetable part was refuse.

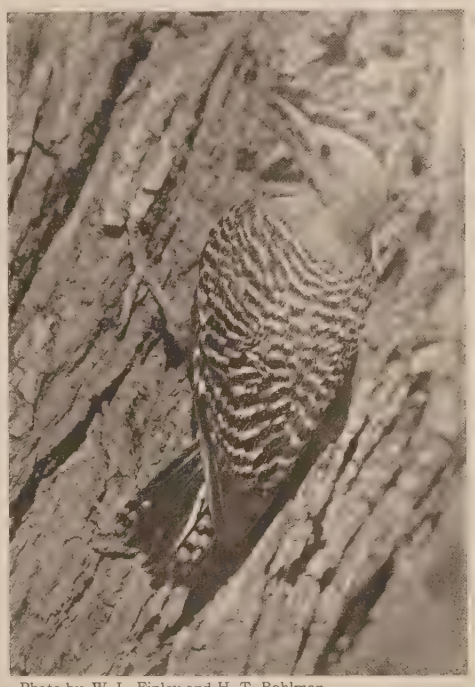


Photo by W. L. Finley and H. T. Bohlman

GILA WOODPECKER

The giant cactus is its favorite home

FLICKER

Colaptes auratus auratus (*Linnæus*)

A. O. U. Number 412 See Color Plate 64

Other Names.—Yellow-shafted Woodpecker; Golden-winged Woodpecker; Clape; Pigeon Woodpecker; Yellow-hammer; High-hole; High-holder; Yarrup; Wake-up; Wood-pigeon; Heigh-ho; Wick-up; Hairy Wicket; Yawker Bird; Walk-up.

General Description.—Length, 11 inches. Upper parts, grayish-brown, barred with black; under parts, lilac-brown, black, and yellowish.

Color.—Adult Male: Crown and hindneck, plain gray interrupted by a crescentic band of bright scarlet, the forehead usually more brownish; back, shoulders, wing-coverts, and secondaries grayish-brown, sharply barred with black, the black bars much narrower than the brown interspaces (except, sometimes, on secondaries) and pointed at the extremities, except on secondaries, where much broader than elsewhere; primaries, dull black and spotted, at least on middle portion, with light grayish-brown or dull pale yellowish (these spots usually rather indistinct), their shafts bright clear yellow; rump, white, mostly immaculate but laterally broken by broad brace-shaped bars of black; upper tail-coverts, white, variously marked (usually transversely) with black; tail, black, the middle pair of feathers duller or more olivaceous basally, usually edged, narrowly,

with dull whitish, the inner web often notched or spotted along edge with the same; shafts of tail feathers (except middle pair) bright pure yellow with extremities black; before and above the eye, deep reddish cinnamon, below eye and sides of head together with chin, throat, foreneck, and upper chest, uniform lilac-brown; cheeks, black, forming a conspicuous elongated patch or "mustache"; lower chest, black, forming a conspicuous crescentic patch; rest of under parts pale lilac-brown or dull buff-pinkish fading into white or pale yellowish on sides and on under tail-coverts, conspicuously spotted with black, the spots mostly roundish, larger and subtriangular, sometimes V-shaped, on under tail-coverts; under wing-coverts, pale buff yellow, paler along edge of wing, where spotted with black; inner webs of wings, deep yellow (in certain lights), the basal portion of outer primaries and greater part of other feathers broadly edged with buff-yellow, extremities broadly barred or transversely spotted with the same; under surface of tail, saffron or dull yellow, broadly and abruptly tipped with black, the outside pair of feathers with a terminal spot or edging of whitish, the outer web usually narrowly edged or notched with the same, or with blackish alternating with whitish; bill, black in summer, more brownish or dusky horn color (especially on basal half above) in winter; iris, dark reddish-brown or brownish-red. ADULT FEMALE: Similar to the adult male, *but without the black cheek patch or "mustache,"* this replaced by the color of throat (sometimes tinged with dull grayish).

Photo by H. K. Job Courtesy of Outing Pub. Co.

FEMALE FLICKER FEEDING YOUNG IN THE NEST

Nest and Eggs.— NEST: In tree or stub. EGGS: 5 to 9, white.

Distribution.— Eastern North America from tree limit south to the Gulf coast.

Drawing by R. I. Brasher

FLICKER (¼ nat. size)

One of the most interesting of the Woodpeckers

The Flicker is the most interesting bird of all the Woodpeckers. The fact that it has been called by so many different names besides that of Flicker shows how very different kinds of people have made very different kinds of observations of the bird. One observer has seen the bird fly into a hole it has chiseled out with its bill near the top of a high dead tree-stub and he has given the bird the name of High-hole or High-holder. Another person has heard the bird calling its *Yarrup-yarrup* while flying about from tree to fence post and to tree again in quest of food; hence the common name of Yarrup. Another person hearing the loud one-syllable call across the fields or the swamp lot has named the bird the Clape. Yet another, hearing the swish of his friendly *weechem* call as he wings along in a wavy up and down flight from ten to a hundred feet above the ground, has named the bird the Flicker.

He is in reality the Yellow-shafted Woodpecker or Golden-winged Woodpecker because of the bright yellow undersides of the wings and shafts of the wing feathers. In the northern part of its range the Flicker averages a trifle larger in size, and he is there known as the Northern Flicker (*Colaptes auratus luteus*). West of the Mississippi the yellow becomes red and we find there the Red-shafted Woodpecker (*Colaptes cafer collaris*).

The Flicker is a friendly neighbor. His interest is so hearty in the life about him. He may be on the limbs of the trees in the characteristic Woodpecker fashion, or he may be on the ground making a desperate noise in the leaves, or he may be up and down, out and in a pasture in the most erratic fashion. His disposition to make friends with the Robins and Bluebirds and even with the English Sparrows has often been noted, and even Swallows and Hawks often meet him on friendly terms. L. Nelson Nichols.

Photo by H. L. Ferguson Courtesy of Nat. Asso. Aud. Soc.

A GROUND-BUILT NEST OF A FLICKER

This resourceful Flicker lived on Fishers Island, New York. No nesting-site, measuring up to Woodpeckers' standards, was available and she therefore hollowed out a place on the ground. The imprint made by her tail as she turned around can be plainly seen

Photo by F. C. Pillett Courtesy of Nat. Asso. Aud. Soc.

YOUNG FLICKERS

Four of a family of seven raised in this box

From the point of view of the food analyst the farmer and the horticulturist have very little quarrel with the Flicker. It eats only a few predacious ground beetles. The remainder of the animal food is entirely of harmful species. In its vegetable diet, grain and fruit are the only useful products eaten, and the quantities are insignificant. The bird, like many others, has the bad habit of sowing broadcast the seeds of the poison ivy, but there seems no remedy for this.

ORDER OF GOATSUCKERS, SWIFTS, ETC.

Order *Macrochires*

LIKE the order of Cuckoos, this is a composite order. It includes three sub-orders, each with but one family. These families differ widely from one another in nearly every respect. They are alike on the one point of having small, weak feet, totally unfit for perching. As a result they spend most of their time flying about, and take their food from the air. This in turn has led to a development of the hand or distal-section of the wing — hence the name of the order, *Macrochires*, which literally means "large hand."

GOATSUCKERS

Order *Macrochires;* suborder *Caprimulgi;* family *Caprimulgidæ*

GOATSUCKERS or Nightjars are small to medium-sized (rarely rather large) birds with small, weak bill, deeply cleft mouth, weak feet, long wings, and protective coloration. Their dull colors, in elaborately mottled, freckled, or barred pattern, render them, when at rest, exceedingly difficult to distinguish from their immediate surroundings of stony or sandy ground, dry leaves, or grass, or branches of trees. None of the species are known to build a nest, the eggs (also, as a rule, protectively colored) being deposited on the ground, or other plain surface. The young when hatched are covered with down but need the care of the parents.

The members of this group gather their food either at night or during the twilight hours. Their days are passed in rest. They are chiefly insectivorous, though some of the larger species are known to swallow, entire, small birds. All of their food is caught on the wing. Many of the species are noted for peculiar cries, the Whip-poor-will and Chuck-will's-widow of the United States being well-known examples.

The family is found nearly throughout the warmer portions of the world, and is very numerous in species, about fifty occurring in America. The name "Goatsucker" is derived from an old-time superstition that the common European species subsisted by milking the goats; doubtless this idea was fostered by seeing the birds fly near the goats at night or in the early evening searching for the insects surrounding the animals.

CHUCK-WILL'S-WIDOW

Antrostomus carolinensis (*Gmelin*)

A. O. U. Number 416

Other Name.— The Great Bat.

General Description.— Length, 12 inches. Plumage, a variegation of black, brown, gray, and buff. *Rictal bristles with lateral filaments.*

Color.— ADULT MALE: General tone of upper parts, brown, more grayish on shoulder, everywhere minutely streaked and sprinkled with black (the marks coarser on shoulder, wing-coverts, and middle tail-feathers); crown, broadly streaked with black, the streaks much broader along center, obsolete on edges; shoulders with irregular large blotches of black, these usually irregularly margined, in part at least, by buff; middle tail-

feathers with a center series of very irregular broken spots of black, which often show a tendency toward forming broken bars which become less distinct, or obsolete, toward edge of each web; three outer feathers (on each side) with terminal half or more of inner web white, this encroaching on inner portion of outer web, the remainder of these feathers coarsely and irregularly barred with black and dull tawny; the latter largely predominating on terminal half of outer web, especially on the second and third, and sometimes nearly uniform, the tawny extending across tip of inner web and even tingeing the white along inner edge; wing-coverts with large, irregular spots or blotches of black and with a transverse series of large buff spots across middle portion; primaries and primary coverts dull black, coarsely and irregularly spotted with tawny, the spots much less distinct and more broken on inner webs, which are largely uniform dusky basally; lores, space around eye, sides of head, cheeks, chin, and upper throat, dull ochraceous, narrowly barred with dusky; lower throat, deep buff to buffy-white, forming a conspicuous transverse band, the front rather broadly barred with black; chest and breast brown finely streaked or stippled with dusky (the upper chest more closely barred), the center of the breast with several irregular large spots or blotches of buff or buffy-white; abdomen and flanks, dull buff irregularly barred with dusky and with occasional triangular spots of the general ground color; under tail-coverts, clearer buff, irregularly and very variably barred with dusky; bill, brown; iris, dark brown; feet, brownish. ADULT FEMALE: Similar to the adult male but without the white areas on inner webs of outer tail-feathers, which are irregularly marbled or mottled with black on a light tawny-buff ground, both webs of the three outer feathers (on each side) being tipped with tawny-buff.

Nest and Eggs.— EGGS: 2, creamy or pinkish-white, blotched, marbled, and spotted with pale buff, browns and lilac; laid on the ground in thickets, in swampy, tree-shaded spots, or in pine groves.

Distribution.—Eastern United States; breeding from southern Virginia and southern Ohio (?), southwestern Indiana, southern Illinois, southern Missouri, and southeastern Kansas southward to the Gulf States (Florida to Texas); west to central Texas; in winter south to Bahamas, West Indies, Central America, and Colombia; occasional to Maryland, Massachusetts, Nova Scotia, Ontario, West Virginia, and south-central Kansas.

The largest member in the United States of that interesting family, the Goatsuckers, is the Chuck-will's-widow. In its summer range from Virginia to Illinois southward it is confined chiefly to the coastal plain in the East and the Mississippi basin in the Middle West. It appears not to go into the mountain or Piedmont sections. In winter it retires to our southern borders and in some localities of Florida is very abundant at this season. In general appearance and habits it much resembles the better known Whip-poor-will.

In returning from its winter home the Chuck-will's-widow reaches South Carolina about March 25 and southern Virginia about April 10. We first become aware of its arrival some warm spring evening when the loud cry, from which it gets its name, issues from the thicket or wood lot, for the bird is rarely seen or heard by day. There is a wide-spread belief among the people of the South that this bird is the male Whip-poor-will, although it is twice as bulky as that species. Its cry is variously interpreted as *Chip-fell-out-a-white oak, Twixt-hell-and-white oak,* and various other phrases which usually end in the words " white oak."

The males are supposed to arrive first, the females following four or five days later. Then begins a love-making that for grotesque antics

Drawing by R. I. Brasher

CHUCK-WILL'S-WIDOW (⅛ nat. size)

A mysterious bird of the night, often heard but seldom seen

certainly rivals any other courtship seen beneath the stars. The male struts before the object of his affections, waddling along on his ridiculously short legs with the sublime confidence of masculinity. He makes queer noises, puffing out his throat until he looks as if he had been choked on a lemon. Doubtless these performances appear very fascinating in the big dark eyes of the female.

The birds roost near together during the daytime, sometimes on a fallen tree but more often on the ground. No attempt is made to build a nest of any description, the eggs simply being deposited on the dead forest leaves, which they much resemble. Two is the number laid and the second appears four or five days after the first. Incubation begins immediately and as a result one of the young for a time is larger than its fellow.

When frightened from its eggs the Chuck-will's-widow flies a short distance and with queer cries of *'quack, quack,* seeks to distract the intruder's intention. When the nests are molested it is not uncommon for the birds to remove their eggs or helpless young to a distance of several rods. This is accomplished by the simple expedient of picking them up in the mouth one at a time and flying away. In common with many other species they will, if their eggs be taken, lay a second setting. The usual food consists of beetles, moths, and various other night-flying insects. The mouth is very large for the size of the bird and, when open, is two inches across, thus enabling it to take in large objects, which perhaps accounts for the fact that stomachs of these birds have been found to contain both Hummingbirds and Sparrows.

T. Gilbert Pearson.

WHIP-POOR-WILL

Antrostomus vociferus vociferus (*Wilson*)

A. O. U. Number 417 See Color Plate 65

Other Name.— Nightjar.

General Description.— Length, 9½ inches. Plumage, a variegation of gray, brown, black, and buff. *Tail, rounded.*

Color.—Adult Male: General color of upper parts, mixed grayish-brown and brownish-gray, minutely streaked and stippled with dusky; crown, streaked with black, the streaks narrow and linear (sometimes obsolete) on lateral portion, much broader and more drop-shaped along center line, where usually coalesced and forming an irregular stripe; shoulders with large irregular spots or blotches of black, these usually margined, in part, with irregular narrow areas of buff, the back, rump, and upper tail-coverts streaked with black; middle pair of tail-feathers, brownish-gray, freckled with dusky, and crossed by about seven to nine broken irregular bars of blackish, the next pair similar but darker; *three outer pairs, extensively white, at ends,* on both webs, this decreasing in extent from the third to the outermost, on which the white on outer web is much less in extent than on inner web; remaining portion of these three outer feathers, brownish-black broken by incomplete and irregular bars of brownish-buff; general color of wing-coverts, light

Drawing by R. I. Brasher

WHIP-POOR-WILL (⅞ nat. size)

Everybody knows this bird's voice

brown or grayish-brown, finely marked with dusky, and much broken by irregular mottlings or spotting of light brownish-buff, ochraceous-buff, or dull light tawny-ochraceous, the black often in form of irregular shaft-streaks; primaries and primary coverts, brownish-black, conspicuously spotted on outer webs with tawny, their inner webs with bars of the same color, these not extending to shaft, and becoming paler toward edge of the web; terminal portion of primaries (especially on inner webs) confusedly mottled with grayish-brown and dusky; lores and sides of head, narrowly barred with pale tawny and dusky; cheeks, chin, and throat, brownish-black barred (narrowly) with light tawny-brownish, the first usually flecked with white in front; *lower throat crossed by a band of white*, this often suffused with light buff, especially on center portion; chest and breast streaked with pale grayish-brown and dusky and spotted, especially on chest and sides of breast, with pale brownish buff, the abdomen similarly marked but general color paler, the darker markings more in the form of irregular narrow transverse bars; under tail-coverts, light buff, usually with irregular bars (often V-shaped) of dusky; bill, brown; iris, dark brown; feet, brownish. ADULT FEMALE: Similar to the adult male but without white on lateral tail-feathers, the three outer pairs of which are broadly tipped with buffy, and general coloration averaging browner (more suffused with buffy).

Nest and Eggs.— EGGS: 2, white, beautifully marked with spots of brown, yellowish-brown, and purple; laid on old leaves or decayed bits of wood, usually in deep woods, beneath dense underbrush, or in shady ravines.

Distribution.— Eastern United States and southern Canada; north to Nova Scotia, New Brunswick, Maine, Vermont, southern Quebec, Ontario, southern Keewatin, Manitoba, and Saskatchewan; west to eastern edge of the Great Plains, in eastern Nebraska, Kansas, etc., during migration to west-central Texas, casually to eastern Colorado; breeding southward to northern Louisiana, southern Georgia, northwestern Florida, eastern Texas (?), etc.; wintering in Gulf States (Florida to southeastern Texas) and southward through Mexico to Central America.

Few American birds are less frequently seen than the Whip-poor-will, yet few are more widely known. This apparent paradox is due to the bird's call — it can hardly be called a song — which is as familiar as the honest caw of the Crow. Yet comparatively few people can say that they have ever had more than a fleeting glimpse of the bird, while a great many have never seen it at all; and probably never will. It is by far the best known member of its elusive family, of which the other principal American representatives are the Nighthawk, the Poor-will, and the Chuck-will's-widow.

The call of the Whip-poor-will is probably familiar to more people in this country than is the night utterance of any other bird or mammal, because, under the protection of the darkness, the bird does not hesitate to approach human habitations, or even to frequent city parks. The character of the call as it is commonly heard, is so well known that it needs no description. The three whistled notes included in the utterance, are delivered in practically the same rhythm and tempo, and with the same accent, the emphasis being placed upon the first and third syllables, and most emphatically on the third. Comparatively few listeners get close enough to the bird to hear the faint *chuck* which precedes the phrase, and still fewer are aware that it is accompanied by a peculiar bowing motion, the bow coming with the first syllable. Monotony and uniformity may seem to characterize the utterance, but a close listener will discover that the tone and technique of Whip-poor-wills may differ very considerably. This was noted by an auditor who listened carefully for an hour or more one evening to a chorus of fully a dozen of the birds, and who remarked that some of them were distinctly better singers than others.

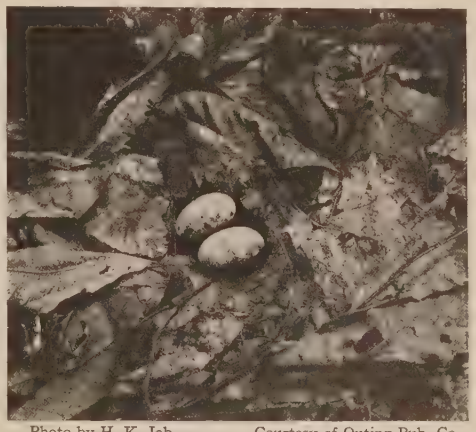


Photo by H. K. Job Courtesy of Outing Pub. Co.

EGGS OF WHIP-POOR-WILL

They are laid on old leaves beneath deep underbrush

Concerning the remarkable persistence of the Whip-poor-will, Mr. Burroughs records the following amusing illustration: "One April morning between three and four o'clock, hearing one strike up near my window, I began counting its calls. My neighbor had told me he had heard one call over two hundred times without a break, which seemed to me a big story. But I have a much bigger one to tell. This bird actually

laid upon the back of poor Will one thousand and eighty-eight blows, with only a barely perceptible pause here and there, as if to catch its breath. Then it stopped about half a minute and began again, uttering this time three hundred and ninety calls, when it paused, flew a little further away, took up the tale once more and continued till I fell asleep."

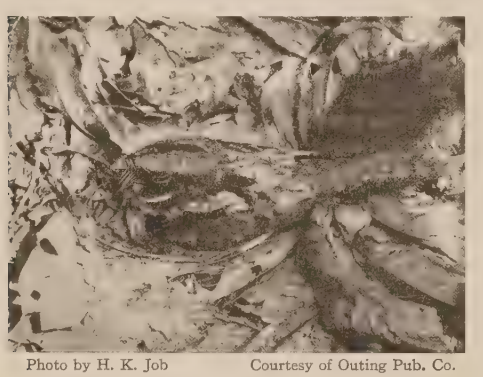


Photo by H. K. Job Courtesy of Outing Pub. Co.

WHIP-POOR-WILL ON NEST

It is interesting to note in connection with Mr. Burroughs's observation, the translation of the scientific name of the Whip-poor-will: the first word, *antrostomus,* means "cave-mouth" and the second, *vociferus,* "strong voice."

Like the other members of its family, the Whip-poor-will when on the ground, where it is apt to be in daytime, is practically invisible, so perfectly does its plumage blend with the fallen leaves and twigs among which it crouches. In fact even when the bird is no more than ten or twelve feet away, and its whereabouts is known positively to within a few feet, a keen and trained eye will sometimes search for fully half an hour before discovering the bird's outline, and meanwhile it will sit perfectly still as if it understood the difficulty under which the observer is laboring. Once flushed, it flies rapidly and absolutely noiselessly for a short distance, only to plunge to the ground and again vanish as if the earth had swallowed it completely. When driven from its eggs the bird flutters along the ground quite rapidly for a few yards, and then begins a series of struggles, accompanied by much flapping of wings and gasping, as if it were hopelessly crippled, all of which performances seem deliberately intended to lure the intruder away from the precious eggs. If followed for a few yards the bird suddenly recovers completely, and vanishes like a ghost.

Stephens's Whip-poor-will (*Antrostomus vociferus macromystax*) does not differ in coloration from the common Whip-poor-will but it averages decidedly larger — about eleven inches in length — and its rictal bristles are much longer and stouter. It is found in southern Arizona, New Mexico, and southwesten Texas, south through the mountains of northern Mexico, wintering south to Guatemala.

POOR-WILL

Phalænoptilus nuttalli nuttalli (*Audubon*)

A. O. U. Number 418

General Description.— Length, 7½ inches. Plumage, a variegation of gray, brown, buff and black. *Tail, square.*

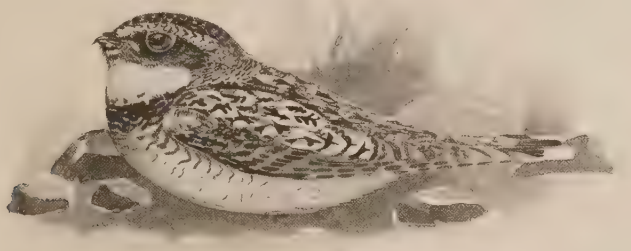
Color.— *General color of upper parts, pale brownish-gray,* palest on sides of crown, shoulders, and upper tail-coverts, the lighter areas in fresh or unworn plumage sometimes pale slivery-gray with a soft downy surface, most of the feathers minutely stippled with darker; crown (which is usually more brownish, sometimes quite dusky, centrally) with very narrow bars (usually more or less brace-shaped) of black, these sometimes widening into spots on center of crown; back and rump also usually with narrow (usually brace-shaped) bars of black or dusky; shoulders with a single narrow, sharply defined black bar enlarged in middle into a usually wedge- or diamond-shaped spot; wing-coverts and inner secondaries, each with one or more narrow bars and a shaft streak of black; other secondaries, irregularly banded with light buff and marbled with pale buffy-gray and blackish, the bands becoming less distinct (more confused) on ends; primary coverts, buff crossed by three bands of black, these connected along inside of shaft; primaries, buff banded with black, their terminal portion finely marbled or streaked with grayish, usually with irregular bars of blackish; upper tail-coverts, sometimes nearly immaculate, but usually with a few narrow bars of black, sometimes banded with darker and lighter shades of grayish; middle pair of tail-feathers, pale silvery-gray to buffy-gray, minutely stippled with darker and with narrow zigzag transverse lines of blackish; second pair, banded with dull black and a mixture of pale brownish-gray and buff, the bands sometimes distinct and fairly regular, oftener indistinct, irregular, or broken, sometimes replaced by a confused combination of mottlings, marblings, and zigzag markings, the grayish areas always broken by blackish or dusky marblings; third pair similar but rather darker (sometimes uniform brownish-black near the tip) and broadly tipped with white; fourth and fifth pairs, similar but with both the uniform

brownish-black band near the tips and the white tip, broader; lores, region around eyes, and sides of head, nearly uniform sepia-brown; cheeks and chin, lighter sepia or grayish-brown, minutely freckled with darker, the former usually intermixed with white in front, this sometimes forming a distinct mouth streak; throat, immaculate silky white, this extending farther backward on the sides than on middle portion; extreme lower throat and upper chest, mostly uniform very dark sooty-brown or sooty-black, the lower chest with tips of feathers, pale colored, sometimes pale grayish minutely stippled with darker, sometimes barred with black and pale grayish or white, sometimes a large whitish spot, of variable form; breast and sides, dull white or buffy-white narrowly barred with dusky-brown or black, the barring more close in front, more distant behind; rest of underparts, cream buff to buffy-white, the flanks sometimes with rather distant and rather broad bars of dusky; under wing-coverts, buff usually immaculate but sometimes with a few dusky spots or bars near edge of wing; inner webs of primaries, buff (except tips) with six or seven large curved transverse spots of dusky, of which the end ones do not cross to edge of the web; bill, black; iris, brown; naked eyelids, dull ochraceous; legs and feet, brownish, the former sometimes more lilaceous.

Nest and Eggs.— Eggs: 2, pure white, unspotted; deposited on bare ground in brush at edge of timber or in a bunch of briers or a thicket upon the open prairies.

Distribution.— Western United States, north to southeastern British Columbia, Idaho, Montana, and northwestern North Dakota; east to southeastern South Dakota, eastern Nebraska, western Iowa, eastern Kansas, and western and central Texas; west to California to about latitude of 40°; south to Lower California and central Mexico.

I first heard the song of the Poor-will in a wild cañon in the mountains of New Mexico. In company with Charles F. Lummis, the archeologist, I was camping in the long-silent homes of the cliff dwellers, high up on the white tufa walls of the haunted cliffs of Tyu-on-yi.



Drawing by R. I. Brasher

POOR-WILL (⅔ nat. size)

It was a quiet summer night with the moon shining in great brilliancy. The surroundings were most impressive, and when the sudden cry of *poor-will, poor-will,* was borne on the air from across the cañon, it was as if a voice from the spirit-land had spoken.

In many places through the high semi-desert regions of the southwest this bird may be found. It captures its prey of various insects by short flights much in the manner employed by the Whip-poor-will. It is distinctly nocturnal in its movements. Apparently it never goes abroad in the day-time, and when evening comes it remains in seclusion until the shadows of night have fallen. Sunlight seems to blind it, as may be observed by anyone who chances to come upon the bird by day as it sits drowsing on the fallen leaves beneath some bush or lowhanging tree. If when disturbed it chances to light where the sunlight is bright, one may walk to within a few feet before it appears to notice the approach.

The two white unspotted eggs are usually laid on the bare ground without any attempt at nest building. Two closely related subspecies, viz., the Frosted Poor-will (*Phalænoptilus nuttalli nitidus*) and the Dusky, or California, Poor-will (*Phalænoptilus nuttalli californicus*) are recognized by naturalists. All these birds retire southward when winter appears.

T. Gilbert Pearson.

NIGHTHAWK

Chordeiles virginianus virginianus (*Gmelin*)

A. O. U. Number 420 See Color Plates 65

Other Names.— Goatsucker of Carolina; Bull-bat; Mosquito Hawk; Will-o'-the-Wisp; Pisk; Piramidig; Long-winged Goatsucker.

General Description.— Length, 10 inches. Plumage, a variegation of black, gray, brown, and buff; *white patch on wing. Tail, emarginate.*

Color.— Adult Male: Prevailing color of *upper parts, sooty-black,* very faintly glossed with greenish, much broken by irregular spotting, marbling, and streaks of buff, pale buffy-gray, and whitish, the black greatly predominating on crown, where the sparse markings are irregularly spot-like and buff, and on back where the markings are smaller, in form of irregular narrow bars or streaks; hindneck with buff spots larger, more regularly drop-shaped, forming indication of a broken collar; wing-coverts with rather large and numerous irregular spots of pale buffy-grayish or dull grayish-white, in addition to smaller irregular streaks and marblings, mostly of a more buffy hue; primary coverts, primaries, and outer greater coverts, dull grayish-black, the last margined terminally with pale grayish, the primaries passing into a more grayish hue at tips, the sixth, seventh, and eighth (sometimes ninth also) crossed a little in front of middle, by a broad, sharply defined, space of white, this involving the full width of both webs, as well as the shaft itself; tail, dull grayish-black or dusky, crossed by bands of paler (mostly buffy-grayish and dull grayish-white) marblings and spottings, and crossed by an interrupted broader band of white; region around eyes and sides of head, sooty-black streaked or longitudinally flecked with buffy, cinnamon, or rusty (sometimes nearly plain blackish), the cheeks similar but spotted with buffy; chin, upper and middle part of throat, and span below ears, immaculate white, forming a conspicuous V-shaped patch; lower throat, dark sooty-brown with triangular spots of brownish buff or cinnamon, the chest similar but with the spots dull whitish, the lower chest and upper breast with the markings more transverse or bar-like; rest of under parts, broadly and regularly barred with dark sooty-brown or sooty-blackish and buffy-white, the bars of the two colors of nearly equal width but the whitish ones averaging rather broader than the dusky ones, especially on rear parts, the under tail-coverts with the white interspaces much wider; under wing-coverts, dark sooty-brown or sooty-blackish much more narrowly as well as less regularly barred with buffy or buffy-whitish; the inner webs of *five outer primaries crossed by a broad band of white in front of middle portion;* bill, blackish; iris, blackish-brown; legs and feet, dusky. Adult Female: Similar to the adult male *but without the white band* on tail, the white on primaries more restricted, the lighter spotting, etc., of upper parts usually more conspicuous (giving a lighter colored cast to the general color of upper parts), under parts more strongly tinged with buffy, and white throat-patch usually suffused with (sometimes entirely replaced by) buff.

Nest and Eggs.— Eggs: 2, grayish-white densely spotted and blotched with gray, black, and pale purple; laid in gravelly spaces of open fields, on large rocks, on gravel roofs in cities, or (more rarely) in open spaces among woods.

Distribution.— North and South America; breeds from southern Yukon, central Mackenzie, central Keewatin, northern Quebec, and Newfoundland south to northern parts of Gulf States and west to edge of Plains from Minnesota to northeastern Texas; migrates through the Greater Antilles and Central America; winters in South America from Brazil south to Argentina.

Drawing by R. I. Brasher

NIGHTHAWK (⅛ nat. size)

Courtesy of the New York State Museum

NIGHTHAWK *Chordeiles virginianus virginianus* (Gmelin)
MALE ⅓ nat. size

WHIP-POOR-WILL *Antrostomus vociferus vociferus* (Wilson)
MALE ½ nat. size

Like the Whip-poor-will, the Nighthawk has always been counted a more or less mysterious, not to say uncanny, bird. The term, "Night-jar," as applied to the family, has some justification in the case of the Nighthawk, for the bird's note certainly is not melodious. But the term "hawk" is misleading, since the bird is in no sense a Hawk, but in reality is a flycatcher, and a very industrious and useful one. Indeed, the Nighthawk couldn't be a Hawk if he wanted to be (and he never shows any such disposition), because instead of the powerful talons of the birds of prey, he has feet which are almost rudimentary in their weakness, while in place of the meat-hook-like beak of the true Hawk, he has a short, weak bill and a mouth which is grotesque in its huge proportions.

Still another misnomer applied to this bird, and one almost as absurd as "Goatsucker," is "Bull-bat," the name by which he is commonly known in the South, and the justification for which remains one of the profound mysteries of popular nomenclature. To be sure, the bat has wings and flies, but right there its outward resemblance to a bird, of any kind, ceases abruptly, and it begins to look more like a rat than any other creature. To call the bat a "flying rat" would be much more sensible than it is to call the Nighthawk a "Bull-bat," for the rat and the bat at least belong to the same great class, the mammals, while the birds comprise a totally different one.

On the other hand, it seems strange that the makers of popular names should have entirely overlooked this bird's various and marked eccentricities. Appearing in the skies commonly in the early evening (for his activities are chiefly at the twilight hours), his flight is erratic, as if he were bewildered, and is punctuated by frequent repetitions of a short, nasal, and utterly unmusical call, usually uttered at the termination of fluttering dashes upward. His great flight performance, however, is his astonishing aërial dive, generally from a height of several hundred feet to within a few feet of the tree-tops or the house-tops or *terra firma* itself. It is preceded by no unusual evolutions that are discernible, though it is executed at fairly regular intervals and usually from a considerable altitude. Having reached a proper height by his characteristic fluttering flight, the bird suddenly almost closes his wings and takes his downward, almost perpendicular plunge, the swiftness of which rapidly accelerates until a fairly dizzying speed is attained. The dive continues until the bird seems to be within a few feet of the tree tops or ground, when a sudden spreading of the wings checks the descent and the diver sweeps easily and gracefully upward to renew his apparently aimless wanderings.

Much foolish mystery and needless misunderstanding has prevailed concerning the origin of the booming sound which is heard when the Nighthawk checks his dive and sweeps upward. An apparent misapprehension on the subject is suggested by part of the bird's scientific name, *Chordeiles,* which is derived from the two Greek words, *chorde* meaning "a stringed instrument," and *deile,* meaning "evening." This seems to be in reference to the popular notion that the white spots seen in the wings of the bird when it is overhead are holes, and that the sound referred to, and which might be imagined to resemble the lowest notes obtainable on a bass-viol, is caused by the passage of the air through these holes. Again, the sound by many is believed to be vocal in its origin. As a matter of fact, it is due solely to the rush of the air through the taut feathers of the partly spread wings, in which, of course, any orifice would greatly impede the bird's flight.

The purpose of this thrilling high-dive is not apparent. The suggestion that it is a sexual demonstration is not wholly credible, for the reason that it is often executed by an individual bird with no other member of the species in sight, whereas the characteristic sex demonstration is performed by the male in the presence of the female. Perhaps it is a plunge after a fly or a beetle, though it seems unlikely that the bird could descry an insect at the distance covered by the fall, and it could have no reason for continuing the descent after the prey had been captured. Many another bird would be accused of taking this grand tumble for the fun of it, but a sense of humor seems very foreign to the Nighthawk.

An old delusion — which is still a belief of many ignorant people, especially in the South — is that the Nighthawk and the Whip-poor-will are identical. There is, indeed, some superficial resemblance between the birds, and they have the common habit of perching lengthwise on a limb or fence-rail; but actual comparison of them reveals marked differences, as to both size and coloration. The most conspicuous of the distinguishing marks of the Nighthawk are the plainly marked white wing-bars, which are to be seen clearly from below, and which the Whip-poor-will lacks. The Whip-poor-will furthermore is essentially a bird of the woods, and does not — at least before nightfall — go hawking around in the open after the somewhat crazy manner of the Nighthawk. Close comparison of

the birds would reveal the possession by both of a very curious comblike process on the inner edge of the middle claw of each foot. This comb the bird uses in freeing itself of vermin.

The skillful evolutions of a company of Nighthawks as the birds gracefully cleave the air in intersecting circles is a sight to be remembered. So expert are they on the wing that no insect is safe from them. Unfortunately their erratic

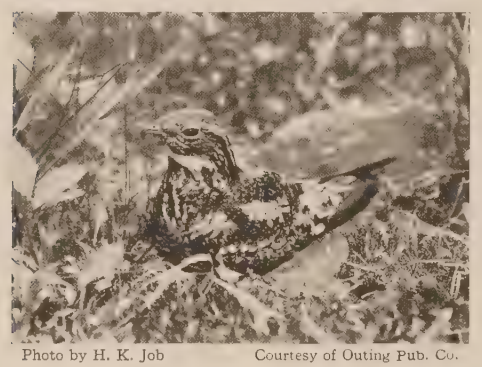


Photo by H. K. Job Courtesy of Outing Pub. Co.

NIGHTHAWK

Alarmed as she was incubating

flight tempts men to use them for targets, and this inexcusable practice is seriously diminishing their numbers, which is deplorable, since the birds are most useful. The Nighthawk is a voracious feeder and is almost exclusively insectivorous. GEORGE GLADDEN.

The Pacific Nighthawk (*Chordeiles virginianus hesperis*) is similar to the common Nighthawk but its general coloration is lighter, the lighter markings on the back, shoulders, and wing-coverts being more numerous. It breeds from southwestern British Columbia south along the coast to northern California and in the Sierra Nevadas south to southern California. Its winter home is unknown.

Sennett's Nighthawk (*Chordeiles virginianus sennetti*) is even lighter and more grayish in appearance than the Pacific Nighthawk. This member of the family breeds on the treeless plains from Saskatchewan and Manitoba south to central Nebraska. During migration it is seen in Texas, but where it spends the winter is unknown.

The Western Nighthawk (*Chordeiles virginianus henryi*) has a more yellowish appearance, the darker markings being more brownish and the lighter ones more buffy. It breeds from southeastern British Columbia, Alberta, and southwestern Saskatchewan south to southern Texas and the mountains of northern Mexico, and winters in South America.

The Florida or Chapman's Nighthawk (*Chordeiles virginianus chapmani*) is like the common Nighthawk in coloration but is decidedly smaller — only eight and three-quarter inches in length. It breeds in the States of the Gulf coast from Florida to eastern Texas. As is the case with some of the other Nighthawks its winter range is unknown.

SWIFTS

Order *Macrochires;* suborder *Cypseli;* family *Micropodidæ*

SWIFTS never perch on branches of trees. They cling easily to the sides of vertical surfaces — to a rock or to the inside of a hollow tree trunk or a chimney. Like the Woodpeckers they press the tail against the surface for an additional support. Apparently they cannot grasp a branch with their feet in such a way as to maintain a fixed position on it.

Like the Swallows, the Swifts have very small, flat, triangular bills, large mouths, and extremely long wings. They, too, are insect-eating birds and take their prey while flying.

The salivary glands of the Swifts are greatly developed and the mucilage-like secretion is used in making the nests. In the species found in the Orient the nest is composed almost entirely of this substance, and Chinese and Japanese epicures consider them a great delicacy. The common Chimney Swift of the eastern United States makes a nest in shape similar to that of the edible bird's-nest but uses dead twigs and glues them together with the saliva.

Young Swifts are naked when hatched and for about two weeks are fed in the nest. After that they leave the nest and cling to the wall beside it.

Swifts are very beneficial, as their food is entirely made up of insects; and they should be encouraged to take up their residence near human habitations. Because the parasites which use the Swifts for hosts resemble bed-bugs, the birds have been unjustly accused of bringing these pests into houses; but the fact of this matter is that these parasitic insects would quickly die if separated from their hosts.

BLACK SWIFT

Cypseloides niger borealis (*Kennerty*)

A. O. U. Number 422

Other Name.— Northern Black Swift.

General Description.— Length, 7½ inches. Plumage, sooty-blackish, lighter below. Tail, slightly forked, the feathers not tipped with spines.

Color.—Adult Male: Crown and hindneck, deep grayish-brown or sooty, passing into sooty-blackish on back and other upper parts (the wings and tail very faintly glossed with bluish); chin and throat, much lighter grayish-brown passing into much darker sooty on under parts of body and under tail-coverts (the color slightly darker than that of crown); feathers of forehead and crown, narrowly margined at tip with grayish-white, these whitish tips much broader on sides of forehead, blending on edge into a distinct whitish area bordering the upper edge of the velvety-black lores; marginal under wing-coverts, very narrowly margined terminally with pale grayish; bill, black; iris, dark brown. Adult Female: Similar to the adult male but tail less notched (nearly square), under parts, paler.

Nest and Eggs.— Nest: In crevices of sea cliffs of the California coast and on inaccessible mountain walls; a flimsy structure of grass and rootlets snugly tucked away in a niche of the rocks. Egg: One, nearly three times the size of the White-throated Swift's egg, pure white.

Distribution.— Western North America; breeds from southern British Columbia and southern Colorado, south to central Mexico; winters in southern Mexico.

Like the White-throated Swift, this species breeds on inaccessible cliffs, though its nest is sometimes placed on the cornice of a building. Its flight resembles that of the Chimney Swift, but it is much larger than that familiar bird of the eastern States and quieter, too; in fact, Mr. Ridgway, who observed the Black Swifts in Nevada, says they were "perfectly silent" there. An observer of them in Cuba, however, reported that when one of these Swifts pursues another, the pursuer utters a series of soft notes, somewhat like a song. They are often seen hawking for insects above the city of Seattle, but usually at an altitude of from 300 to 500 feet, except when showers are imminent.

To A. G. Vrooman of Santa Cruz, California, belongs the honor of discovering the first authentic eggs of this species.

CHIMNEY SWIFT

Chætura pelagica (*Linnæus*)

A. O. U. Number 423

Other Names.— Chimney Swallow; American Swift.

General Description.— Length, 5½ inches. Plumage, sooty-blackish, lighter below. Tail, less than ½ length of wing, rounded or even, the feathers with spiny tips.

Color.— Adults: Above, plain dark sooty-olive passing into paler grayish-brown on rump, upper tail-coverts, and tail, the plumage slightly glossy, the feathers of crown darker centrally, producing an indistinctly scaly effect, those of the rump and the upper tail-coverts sometimes very narrowly and indistinctly tipped with paler; rigid shafts of tail-feathers, black; wings slightly glossy sooty-blackish, the inner

webs of the feathers passing into grayish-brown toward edges; loral region, blackish, the feathers along projecting edges of forehead and crown (especially the portion over the eye), narrowly (sometimes very indistinctly or obsoletely) margined with whitish; remainder of the sides of head, the sides of the neck, and under parts, plain grayish-brown fading into a much paler tint on throat, chin, and cheeks; iris, brown.

Nest and Eggs.— NEST: Inside a chimney; of small twigs glued together with a gelatinous fluid secreted by the salivary glands, forming a semi-circular wall pocket. EGGS: 4 to 6, pure white.

Distribution.— Eastern North America; north to New Brunswick, Nova Scotia, Province of Quebec, southern Labrador, northern Ontario, Manitoba, and Alberta, accidentally to southern Greenland; west to western border of Great Plains and (accidentally?) New Mexico; breeding southward to southern Florida and thence westward along Gulf coast to southeastern Texas; occasional straggler to the Bermudas.

If it is proper to speak of the Chickadee as the "small-boy bird of the woods," it seems appropriate to characterize the Chimney Swift

Drawing by R. I. Brasher

CHIMNEY SWIFT (½ nat. size)

A bird who is never at rest except when he is at home

as the "small-boy bird of the air." All of the Swallows, and especially the Barn Swallow, seem to frolic a good deal on the wing, but their near relative, the Swift, is even more sportive. It is not uncommon to see two of them engaged in what appears to be a contest of speed, and skill in dodging, very like the small-boy's game of tag, keeping up meanwhile their very rapid chipping note, which may be their equivalent of laughter.

The Swift is very rapid and adroit on the wing, but is not so graceful a flyer as the Barn Swallow. However, it apparently has the more endurance of the two, for it is never seen to alight, and undoubtedly is steadily on the wing from the time it leaves its chimney-nest until it returns. Very likely this period of unceasing and rapid flight often lasts for an hour or two, and all of the bird's food is captured and eaten — except such as it takes to its young — while it is on the wing.

Like the Barn and Eave Swallows, the Swift's nesting habits have been changed by its coming into contact with man and his works. Originally the bird's nesting place was in a hollow tree. "I well remember the time," wrote Audubon, "when in lower Kentucky, Indiana, and Illinois many resorted to excavated branches and trunks for the purpose of breeding; nay, so strong is the influence of original habit that not a few still [about 1808] betake themselves to such places, not only to roost, but also to breed. . . . In such instances they appear to be as nice in the choice of a tree as they generally are in our cities in the choice of a chimney wherein to roost. Sycamores of a gigantic growth, and having a mere shell of bark and wood to support them, seem

Photo by H. K. Job Courtesy of Outing Pub. Co.

YOUNG CHIMNEY SWIFTS

Clinging to the wall like bats

to suit them best; and wherever I have met with one of these patriarchs of the forest rendered habitable by decay, there I have found the Swal-

lows [Swifts] of the forest breeding in spring and summer, and afterward roosting until the time of their departure." And to this day, in districts remote from human dwellings, or even near them, it is not uncommon to find the birds obeying this instinct, and nesting as did their forbears who never saw a man-made chimney.

During both the spring and the fall migrations, the Swifts often gather in immense flocks and but saluting the ear with a multitudinous chippering instead of a humming. People gathered on the sidewalk to see them. It was a rare circus performance free to all. After a great many feints and playful approaches, the whirling ring of the birds would suddenly grow denser above the chimney; then a stream of them, as if drawn down by some power of suction, would pour into the opening. For only a few seconds

Photo by S. A. Lottridge

NEST AND YOUNG OF THE CHIMNEY SWIFT

After discovering this nest the photographer paid the owner of the chimney to allow him to tear down enough of it to obtain this picture

make use of the same chimney for a sleeping room. Mr. Burroughs describes graphically one of these grand going-to-bed performances, as follows: "One fall they gathered in this way and took refuge for the night in a large chimney-stack near me for more than a month and a half. Several times I went to town to witness the spectacle, and spectacle it was; ten thousand of them, I should think, filling the air above a whole square like a whirling swarm of huge black bees, would this downward rush continue; then, as if the spirit of frolic had again got the upper hand of them, the ring would rise, and the chippering and circling go on. In a minute or two the same maneuver would be repeated, the chimney, as it were, taking its Swallows at intervals to prevent choking. It usually took a half-hour or more for the birds all to disappear down its capacious throat."

A remarkable fact, concerning the Swift is

that no one has yet discovered where it spends the five months between the time it disappears from the northern coast of the Gulf of Mexico in November until it returns in March. This extraordinary mystery was recorded by Wells W. Cooke, assistant biologist of the Bureau of Biological Survey, in his invaluable monograph on *Bird Migration,* as follows: "Much has been learned about bird migration in these latter days, but much yet remains to be learned, and the following is one of the most curious and interesting of the unsolved problems. The Chimney Swift is one of the most abundant and best-known birds of the eastern United States. With troops of fledglings, catching their winged prey as they go and lodging by night in tall chimneys, the flocks drift slowly south joining with other bands, until on the northern coast of the Gulf of Mexico they become an innumerable host. Then they disappear. Did they drop into the water or hibernate in the mud, as was believed of old, their obliteration could not be more complete. In the last week in March a joyful twittering far overhead announces their return to the Gulf coast, but their hiding place during the intervening five months is still the Swift's secret."

GEORGE GLADDEN.

Vaux's Swift (*Chætura vauxi*) is the western representative of the Chimney Swift, ranging through the Pacific coast district from British Columbia to Lower California. Its upper parts are sooty brown and the under parts, gray. In general appearance it is quite Bat-like and it, too, flies abroad at eventide.

WHITE-THROATED SWIFT

Aëronautes melanoleucus (*Baird*)

A. O. U. Number 425

General Description.— Length, 6¾ inches. Upper parts, sooty-blackish with two white patches; under parts, white. Tail, forked with the feathers narrow and stiff but not spiny.

Color.— ADULTS: Crown and hindneck, grayish-brown to very dark sooty-brown, sometimes uniform but usually becoming paler on forehead, and with feathers indistinctly margined with paler, especially on frontal region, the projecting edges of crown, dull whitish, forming a distinct narrow streak over the eye; back, shoulders, wing-coverts, rump, and upper tail-coverts, plain sooty-blackish, the tail similar but rather more sooty (less blackish); *a large patch of white or brownish-white on each side of rump,* pointed in front; wings, dark sooty-brown or sooty-blackish, the secondaries broadly tipped on outer web with dull or brownish-

Drawing by R. I. Brasher

WHITE-THROATED SWIFT (⅔ nat. size)

Its wonderful swiftness of wing and its inaccessible habitat insure this bird's safety — from man, at least

white, the inner webs of primaries passing into pale grayish-brown on edges (except on longer quills); a dusky spot immediately in front of eye, the loral region otherwise whitish; the region around the ear and back of the eye, sooty grayish-brown; the regions below the eye and cheek, chin, *throat, chest, and center portion of breast and abdomen white,* usually tinged with brownish; sides and flanks (broadly) and under tail-coverts, plain very dark sooty-brown or sooty-black; feathers along edge of wing broadly margined with pale grayish-brown or dull brownish-white; iris, dark brown.

Nest and Eggs.— NEST: Glued to cliff or cave sides or in holes in limestone cliffs; constructed of vegetable fiber and feathers, lined with strips of bark and a few feathers. EGGS: 4 or 5, pure white, unmarked.

Distribution.— Western North America; north to Washington, southern Montana, northern British Columbia, and southwestern Alberta, east to western South Dakota, western Nebraska, Wyoming, Colorado, New Mexico, and western Texas (Chisos Mountains), south to Lower California and through Mexico to Guatemala.

There is no very striking physical resemblance between the White-throated Swift and the polar bear, but in one respect they are fortunately alike: neither is, or ever is likely to be, in danger of annihilation by man; the bear because the men who would exterminate him for "sport" or gain (and these do not include his gentle neighbors, the Eskimos) will never invade his habitat in numbers sufficient to threaten his existence; and the Swift because its home on the unscalable peak or precipice is equally inaccessible, except possibly by flying machines, the use of which for this purpose probably would not prove profitable. To be sure, the bird sometimes comes within gunshot and therefore occasionally is "collected," which is to say, shot; but the tremendous speed and the erratic character of its flight make its "collection" an uncertain occupation.

Two of its habitats in which it has been observed, are the lofty cliffs in the Garden of the Gods in Colorado, and the cañon walls of the East Humboldt Mountains, in Nevada. In both places it nests in unapproachable crevices and pockets about half-way up sheer cliffs several hundred feet high, or in towering cañon walls of much greater altitude. On the wing and at other times the bird utters a spirited chatter. It seems also to be rather belligerent, for two birds have been seen to seize each other while in flight, and hold on, as they dropped together in a whirling fall, until near the ground, when they would relinquish their grip and dart away perhaps to resume the combat as soon as they had reached a safe altitude.

Unlike Vaux's Swift, the White-throated seems to have no special preference for the evening hours, but does much of its hunting in broad daylight.

HUMMINGBIRDS

Order *Macrochires;* suborder *Trochili;* family *Trochilidæ*

HUMMINGBIRDS are small to extremely small birds, with the terminal or hand portion of the wing longer than the portion nearer the body. The neck is very long, forming four-sevenths of the vertebral column. The bill is slender, usually awl-shaped, sometimes compressed and often widened and deepened at the base, extremely variable as to relative length (from decidedly shorter than the head to longer than the head, neck, and body together), usually straight, but sometimes excessively curved downward. The tongue is extremely long, slender, capable of extension, split at the tip, each division with the outer edge curled upward and inward for part of its length, forming, in effect, two parallel tubes. The tail is excessively variable in relative length and form — in fact more variable than in any other group of birds.

The nest is open above, is variable as to form and position, but usually cup-shaped and attached to a twig, and is composed of plant-downs or other soft materials, usually stuccoed exteriorly with bits of moss, lichen, or fragments of barks and spiders' webs. The eggs are usually two in number, but sometimes only one, immaculate white in color, and broadly elliptical in shape.

Inhabitants exclusively of America, the Hummingbirds constitute not only the most charming element in the wonderfully varied bird-life of the western hemisphere, but also, without doubt, the most remarkable group of birds in the entire world. No other group of birds is so brilliant in plumage or so different from all others in mode of flight and manner of feeding. The general habits of Hummingbirds are not dissimilar to those of birds in general. They are both aërial and arboreal, but are unable to progress upon the ground or any flat surface by means of their legs and feet alone. They perch readily and frequently upon trees or bushes, or may even cling to rocks or other vertical surfaces; and their nest-building presents nothing that may be deemed peculiar or even specially characteristic. In their flight and manner of procuring their food, however, they differ strikingly from all other birds, in these respects closely resembling certain insects, especially the evening hawk-moths. Their food, consisting mainly of small insects but in part also of the nectar of flowers, is mostly gleaned from blossoms, before which they poise, with wings so rapidly vibrating as to be invisible except as a dim haze or halo partly surrounding the body and producing the humming sound from which these birds derive their vernacular name, the bill thrust inside the flower, and the slender, semi-tubular tongue extended into the depths of the blossom. Some species, instead of feeding from flowers, glean their insect food from the bark of forest trees, following along the branches in suspended flight in the same manner that the others pass from flower to flower. In their feeding from flower to flower, Hummingbirds, like bees, butterflies, and moths, perform the same office in the economy of nature as insects by transferring pollen from one bloom to another and thus assisting in the fertilization of plants. In flying from one point to another, the flight of Hummingbirds, while essentially direct, is usually more or less undulating, and so extremely rapid that the eye can scarcely follow. Often this flight is accompanied (at least in the case of males of some species) by a more or less remarkable screeching or grating sound, produced mechanically by some peculiarity of wing-structure.

Diminutiveness of size and metallic brilliancy of coloring are the chief external characteristics of Hummingbirds, though exceptions to both occur; and in these respects they, as a group, have no rivals. Unfortunately stuffed specimens convey but a faint idea of their splendid coloring, for the perfection of their changeable refulgence can be fully realized only in the living bird, whose every change of position flashes to view a different hue — emerald green replacing ruby red, sapphire blue succeeding fiery orange, or either becoming opaque velvety black — according to the angle at which the sun's rays touch the feathers, an effect which can only partially be imitated with the stuffed specimen by artificially changing its position with reference to the light. Many species have a spot on the forehead at the base of the bill of the most luminous or brilliantly metallic color (usually green) that it is possible to imagine, this spot being surrounded by the most intense velvety black — evidently to enhance the brilliancy of the ornament by contrast, just as a jeweler would, for the same purpose, display a diamond or other gem against a background of black velvet. Often there is a spot of brilliant color and one of a contrasting hue just below it, the result being that first one color, then the other, is flashed forth as the bird changes slightly its position.

RIVOLI'S HUMMINGBIRD

Eugenes fulgens (*Swainson*)

A. O. U. Number 426

Other Names.— Refulgent Hummingbird; Rivoli's Hummer.

General Description.— Length, 5 inches. Upper parts, metallic green; under parts, black, green, and gray.

Color.— Adult Male: Crown, rich metallic violet or royal purple, the forehead blackish, usually glossed with green or bluish-green; hindneck, sides of head, velvety-black or bronze-green, according to light; rest of upper parts, metallic bronze, bronze-green, or golden-

green; wings, dark brownish-slate or dusky, faintly glossed with purple or purplish-bronze; chin and throat, brilliant metallic emerald-green, this brilliant green area extending much farther backward laterally than centrally; chest and upper breast, velvety-black or bronze-green, passing into dusky-bronze or bronze-green on lower breast, this into grayish-brown or sooty-grayish on abdomen and flanks; thigh and anal tufts, white; a small white spot or streak back of eye (sometimes a whitish rictal streak also); under tail-coverts, light brownish-gray (sometimes glossed with bronze or bronze-green) margined with whitish; bill, dull black; iris, dark brown. ADULT FEMALE: Above, including four middle tail-feathers, bronze-green, the crown duller (sometimes dull grayish-brown in front); three outer tail-feathers (on each side) with basal half bronze-green, then black, the tip brownish-gray, this broadest on outermost feather, much smaller on third; wings, as in adult male; a white streak back of eye and below this a dusky area; under parts, brownish-gray or buffy-grayish, glossed laterally with metallic bronze or bronze-green, the feathers of chin and throat margined with paler or with dull grayish-white; producing a scaly appearance; thigh and anal tufts, white; under tail-coverts, brownish-gray (sometimes glossed with bronze-green), margined with pale brownish-gray or dull whitish; bill, etc., as in adult male.

Nest and Eggs.— NEST: In sycamores, maples, or firs usually about 40 feet up; constructed of silky plant fibers, grass tips, lined with sycamore down and coated with lichens, fastened on with cobwebs. EGGS: 2, white.

Distribution.— Mountains of southern Arizona, southwestern New Mexico, extreme western Texas, Mexico, and Central America southward to Nicaragua.

The distinctive fact about this Hummer is that it doesn't hum, at least not in the way which makes that term more or less accurate in describing the sound made by the wings of other members of the family. Even when the flight of the bird is exceedingly rapid, which it often is, the whir of its wings is more like the buzz of a big bumblebee or beetle than the almost musical drone made by the flight of other Hummers. Moreover the flight of this species is often so deliberate, comparatively speaking, that the outline of its wings may actually be seen, whereas the little pinions of other Hummers are seen only as faint areas of mist on either side of the body. The tail of the male Rivoli is slightly forked while that of the female is double rounded.

Many years ago it was established beyond a doubt that the diet of Hummingbirds consists largely of insects, rather than solely of nectar; but the latter notion is likely to persist indefinitely because it is a poetic one which appeals to the imagination, and seems in keeping with the fairy-like character of this mite of a bird. The Rivoli Hummer, however, not only depends largely upon insects for its food, but captures many of them in flight. This it often does in the most approved flycatcher manner, by lying in wait, perched on a dead limb in a tree-top, and dashing out after passing insects, few of which have any chance to escape the speed and certainty of this little hunter's movements. The insects found in flowers of honeysuckle and agave are its favorites.

BLUE-THROATED HUMMINGBIRD

Cyanolæmus clemenciæ (*Lesson*)

A. O. U. Number 427

Other Names.— Blue-throated Casique; Blue-throated Hummer.

General Description.— Length, 5¼ inches. Upper parts, green; under parts, brownish-gray.

Color.— ADULT MALE: Above, rather dull metallic bronze-green, passing into olive-bronze on rump, where the feathers have narrow terminal margins of pale brownish-gray; upper tail-coverts, dusky (sometimes faintly glossed with greenish or bluish), narrowly and indistinctly margined with paler; tail, black, faintly glossed with bluish, the outer feathers tipped with white; wings, dark brownish-slate color or dusky, very faintly glossed with purplish; a conspicuous white streak back of eye extending obliquely backward and downward behind upper rear margin of ear region, the latter, together with the lores and space below eye, plain dusky; a chin streak of whitish (this sometimes obsolete); *chin and throat, metallic blue*, the feathers very narrowly and indistinctly margined with brownish-gray; rest of under parts, plain deep brownish-gray or brownish-slate color, the under tail-coverts broadly margined with white; thigh and anal tufts and tuft on each side of rump, white; bill, dull black; iris, dark brown. ADULT FEMALE: Similar to the adult male, but blue of throat replaced by the general dull brownish-gray of under parts.

Nest and Eggs.— NEST: In fork of shrub or sapling, or on a fern; a handsome structure of fine mosses smoothly felted together and lined with down of willow catkins. EGGS: 2, white.

Distribution.— Western Texas, southern Arizona, southwestern New Mexico, and Mexico.

Of its diminutive family the Blue-throated Hummer is the largest member which may be considered an American bird, and this claim is none too firmly established, since it is, after all, essentially a bird of Mexico, and Central America, and favors Uncle Sam's domain only to the extent of appearing in southern Arizona. In other respects, too, this bird is unlike the Hummers who are more nearly American in their range and habits. For, besides being larger (about two inches longer than the common Ruby-throat of the eastern States), it is less active and generally more sedate in its demeanor. It even ventures a little song in the form of a faint twitter, which at least is the most elaborate vocal performance of its species in this country. It has a truly Oriole-like manner of searching for food in the blossoms of the big agave trees.

RUBY-THROATED HUMMINGBIRD

Archilochus colubris (*Linnæus*)

A. O. U. Number 428 See Color Plate 66

Other Names.— Hummingbird; Common Hummingbird; Hummer; Ruby-throat.

General Description.— Length: male, 3¼ inches; female, 3⅓ inches. Upper parts, bronze-green; under parts, red, bronze-green, and white.

Drawing by R. I. Brasher

RUBY-THROATED HUMMINGBIRD
(½ nat. size)

A feathered midget who does not hesitate to tackle a big Hawk

Color.— Adult Male: Above, metallic bronze-green, including middle pair of tail-feathers; wings, dark brownish-slate or dusky, faintly glossed with purplish; tail (except middle pair of feathers), dark bronzy-purplish or purplish bronzy-black; chin, cheeks, region below the eyes, and the sides of head, velvety-black; a small spot back of eye, white; *whole throat, brilliant metallic red* changing to golden or even greenish in different lights; chest, dull brownish-white or very pale buffy brownish-gray, passing gradually into deeper brownish-gray on breast and abdomen, the sides and flanks darker and overlaid by metallic bronze-green; thigh tufts and tuft on each side of rump, white; under tail-coverts, brownish-gray (sometimes glossed with greenish-bronze) centrally, broadly margined with dull white; bill, dull black; iris, dark brown. Adult Female: Above, metallic bronze-green, golden-green, or greenish-bronze, including middle pair of tail-feathers; three outer ones on each side, broadly tipped with white, metallic bronze-green for basal half, the intervening portion black; wings, dark brownish-slate or dusky faintly glossed with purplish; a small spot of dull white back of eye; sides of head, deep dull grayish; lores, dusky; cheeks and under parts, dull grayish-white or very pale brownish-gray (usually more decidedly whitish on chin, throat, and cheeks), the flanks and shorter under tail-coverts usually tinged with pale buffy-brownish; thigh tufts and tuft on each side of rump, white; bill, etc., as in adult male.

Nest and Eggs.— Nest: An exquisite cup, less than two inches across, of felted plant, fern, or dandelion-seed down, covered so perfectly with moss and lichens and fastened with spider webs as to appear a mere protuberance on the limb, and lined with a layer of the finest down. Eggs: 2, pure white.

Distribution.— Eastern North America; north, regularly to southern Labrador, Quebec, Ontario, and Keewatin (to about latitude 52°), and in the interior to northern and central Alberta; west to about middle portion of Great Plains (along streams); breeding southward to middle Florida and along the Gulf coast to west-central Texas; wintering from middle and southern Florida and southern Texas southward through southern Mexico and Central America to Panama; casual in Cuba in migration.

Photo by H. K. Job Courtesy of Outing Pub. Co.

AN INTERRUPTED MEAL

Ruby-throated Hummingbird and young

Courtesy of the New York State Museum

RUBY-THROATED HUMMINGBIRD *Archilochus colubris* (Linnaeus)

MALE FEMALE MALE

All life size

Hummingbirds are found only in the Americas, but only one, the Ruby-throated, inhabits the eastern United States. It is a dainty little atom of bird-life, and is of exquisite beauty. No other bird can be mistaken for it, its nearest counterpart in nature being the sphinx moth that sometimes comes about flowers of summer evenings. One usually sees this bird when like a great iridescent bee it whizzes across the yard, or pauses before the nectar-bearing flowers of the garden. The wings beat with a rapidity no eye can follow — no camera record.

A great part of the time the Hummingbird perches on the limbs of trees or less frequently on telephone wires. From its perch it makes frequent trips to nearby feeding grounds only to return shortly and resume its usual occupation of alternately preening its feathers and gazing about the landscape.

The nest is a wonderful creation of plant down, covered with lichens and bound together with spider web or fine plant fibers. It is about the size of an English walnut and is saddled on a small limb from twelve to thirty feet from the ground. The young are fed usually on the semi-digested remains of minute insects which the parents regurgitate for the comfort of the nestlings.

These Hummingbirds winter to a limited number in south Florida. The bulk of them, however, go farther south. In the autumn nights these little birds launch out across the Gulf of Mexico straight for Yucatan or Central America. This incredible journey of not less than 500 miles is made without a single stop for food or rest.

T. Gilbert Pearson.

Photo by H. K. Job Courtesy of Outing Pub. Co.

RUBY-THROATED HUMMINGBIRD PUMPING FOOD INTO THE MOUTH OF THE YOUNG BIRD

BLACK-CHINNED HUMMINGBIRD

Archilochus alexandri (*Bourcier* and *Mulsant*)

A. O. U. Number 429

Other Name.— Black-chinned Hummer.

General Description.— Length: male, 3¾ inches; female, 4 inches. Upper parts, bronze-green; under parts, grayish-white.

Color.— Adult Male: Above, rather dull metallic bronze-green, darker and duller on crown; the forehead, sometimes, dull dusky; wings, dark brownish-slate, or dusky, faintly glossed with purple; tail (except middle pair of feathers), bronzy purplish-black; lores, ear region and cheeks, *chin, upper throat, and sides of throat, uniform opaque or velvety-black; lower throat, metallic violet* or violet-purple; chest, dull grayish-white or very pale brownish-gray; the under parts of body, similar, but usually more decidedly grayish centrally; the sides and flanks, darker and glossed or overlaid with metallic bronze or bronze-green; under tail-coverts, brownish-gray; tufts on the thighs and on each side of rump, white; bill, dull black; iris, dark brown. Adult Female: Similar to the male but with under parts, dull white or grayish-white (more purely white on abdomen and under tail-coverts), the throat sometimes streaked or spotted with dusky.

Nest and Eggs.— Nest: On horizontal limb or in the fork of small twigs; constructed of the down found on the lower side of sycamore leaves; resembles a small round yellow sponge. Eggs: 2, pure white.

Distribution.—Western North America; breeds from British Columbia to northern Lower California and northern Mexico and from the Pacific to western Montana and central Texas; winters in western Mexico.

Many observers of that dainty little feathered gem, the Ruby-throated Hummingbird — the sole representative in the eastern States of its wonderful family — have been treated to the remarkable pendulum performance, which it is likely to execute apparently for the purpose of frightening away an intruder who has come too near its nest. A similar act on a much smaller scale seems to be included in the courtship demonstrations of the Black-chinned Hummer of the western States. In this instance, the arc described by the bird in front of the object of his affections — usually perched motionless on a twig — may be no more than a yard in length, and the bird covers it by flying forward and backward, the forward movement being checked apparently by the quick spreading of its tail. Or, the movement may be backward and then forward in a sidewise position; but both show the bird's marvelous skill in the use of its wings and tail.

There is ample proof that this bird feeds freely upon insects, and often such as are caught by gummy sap exuding from the black birch and other trees. Poising in front of these sap-traps — if they may be so termed — these Hummers snap up the helpless insects; as they return frequently to these sources of food supply, they must rely upon them to some extent, though evidently they feed also upon insects imprisoned in flowers.

In an article contributed to *The Auk,* Miss Merriam (Mrs. Bailey) described the clever and interesting method followed by a female Hummer of this species in building her nest. "The peculiar feature of the building," she says, "was the quivering motion of the bird in moulding. When the material was placed, she moulded the nest like a potter, twirling tremulously around against the sides, sometimes pressing so hard she ruffed up the feathers of her breast. She shaped the cup as if it were a piece of clay. To round the outside she would sit on the rim and lean over, smoothing the sides with her bill, often with the same tremulous motion. When she wanted to turn around in the nest she lifted herself by whirring her wings." The male took no part in these building operations, and in fact did not put in an appearance at all. Mrs. Hummer did all of the work, and it took her just six days to complete her beautiful little home, made chiefly of yellow down taken from the under side of sycamore leaves, with green lichen decorations on the outside when the nest was placed among green oak leaves.

ANNA'S HUMMINGBIRD

Calypte anna (*Lesson*)

A. O. U. Number 431

Other Name.—Anna's Hummer.

General Description.— Length: male, 3½ inches; female, 4 inches. Head, rose-red; upper parts, bronze-green; under parts, gray.

Color.—Adult Male: *Whole head except back and ear region, brilliant metallic rose-red,* changing to violet in certain lights, the rear side feathers of throat elongated; a small spot or streak of white behind eye; upper parts, metallic bronze-green, the upper tail-coverts and middle pair of tail-feathers, similar but usually less bronzy, or more bluish-green; tail (except middle pair of feathers), dark grayish, faintly glossed with greenish-bronze; wings, brownish-slate or dusky faintly glossed with purplish; chest, pale brownish-gray or dull grayish-white; rest of under parts, deeper grayish, strongly glossed with metallic bronze-green laterally, the feathers margined with paler grayish; thigh tufts and conspicuous tuft on each side of rump, white; under tail-coverts, brownish-gray glossed with bronze-green or greenish-bronze and broadly margined with pale gray or grayish-white; bill, dull black; iris, dark brown. Adult Female: Similar but crown like back in coloration, and chin and throat usually with an admixture of metallic red or purplish-red feathers, sometimes with a considerable patch of metallic reddish.

Nest and Eggs.— Nest: Similar to that of the Rufous Hummingbird, but covered with green moss and lined with plantdown, fur, or feathers. Eggs: Also similar.

Distribution.— California in general (except parts of northern coast district), and southward (as a resident) to coast district of northern Lower California; during migration southeastward to southern Arizona.

This little Hummer is quite restricted in its range, living through central and southern California mainly west of the Sierra Nevadas. Like the other Hummingbirds, it builds a beautiful little nest, lining the cup on the inside with cotton or plant down and shingling the outsides

with green mosses and lichens. Sometimes soft feathers are used as a resting place for the eggs.

In the spring when the eucalyptus trees are in blossom, I have often seen these Hummers chasing each other from tree to tree. One may often find this Hummingbird nesting in the eucalyptus, but it is hard to say that any tree or place is its favorite. I have seen nests saddled on the limb of an orchard tree, or the bird may even select a cholla cactus. I saw one built on the curve of an electric light wire under a porch.

In the early spring, the male often makes quite an effort at singing when he is perched on a wire or dry twig. Some people consider it more a high-pitched squeak than a song, but it is continuous. Mr. Charles A. Allen says, "Its simple little lay sounds like *te-uit, te-uit, te-wieu, wieu, wieu,* repeated over and over again, and when angry it utters a very harsh, rasping screech."

When the eggs of the Hummingbird hatch, the birds look like two tiny black bugs. The first sign of feathers is a light streak of brown along the middle of the back. But the queerest thing in the life of the Hummingbird is to watch the mother feed her young. She collects sweets from the flowers, little spiders and other insects which she swallows, and then she feeds by regurgitation. She braces her tail against the side of the nest, draws her dagger-like bill straight up above and plunges it down the baby's throat to the hilt. Then she starts a jabbing process as if to puncture him to the toes. In this way, she pumps his stomach full of food. It looks like the murder of the infants.

I have never seen a Hummingbird fledgling fall from the nest in advance of his strength, as a young Robin does. When the time comes, he seems to spring into the air fully grown, clad in glittering armor, as Minerva sprang from the head of Jove.

One day as I watched a young Hummingbird in the nest, I learned the reason. He sat on the nest edge, stretched his wings and combed out his tail-feathers with his bill. Then he tried his wings. He began slowly, as if getting up steam. He made them buzz till they almost lifted him off his feet. He had to hang on to keep from going. In this way, he practiced many times during the day, until he mastered the art of balancing and rising in the air.

WILLIAM L. FINLEY.

BROAD-TAILED HUMMINGBIRD

Selasphorus platycercus (*Swainson*)

A. O. U. Number 432

Other Name.—Broad-tailed Hummer.

General Description.— Length: male, 4¼ inches; female, 4 7/10 inches. Upper parts, bronze-green; under parts, whitish.

Color.— ADULT MALE: Above, metallic bronze-green; middle pair of tail-feathers metallic bronze-green (sometimes more bluish-green); rest of tail, dull purplish or bronzy-black, the pair next to middle pair usually glossed with bronzy-green (sometimes mostly of this color), the outer web *edged with cinnamon-rufous,* the next pair sometimes also narrowly edged with the same; wings, dark brownish-slate or dusky faintly glossed with purplish; *chin and throat, bright metallic reddish purple*; chest, grayish-white, passing into very pale gray on breast and abdomen; sides and flanks darker grayish, tinged (especially the flanks) with pale cinnamon, the sides and sides of breast overlaid by metallic bronze-green; thigh tufts, white; under tail-coverts, white with a central area of pale cinnamon or cinnamon-buff (sometimes partly bronze-green); bill, dull black; iris, dark brown. ADULT FEMALE: Above, metallic bronze-green, including middle pair of tail-feathers, the latter sometimes blackish or dusky; three outer feathers, on each side, broadly tipped with white, cinnamon-rufous basally, the remaining portion purplish or bronzy-black with bronze-green between the blackish subterminal and cinnamon-rufous basal areas; chin and throat, dull white, the feathers with small center streaks or drop-shaped spots of dusky or dusky bronze; chest, dull brownish-white or buffy grayish-white, the breast and abdomen similar but, usually, more decidedly tinged with buffy; sides and flanks, light cinnamon; under tail-coverts, pale cinnamon (sometimes partly grayish) centrally, broadly margined with white; thigh tufts, white; bill etc., as in adult male.

Nest and Eggs.— NEST: Identical with Rufous Hummingbird; often placed in dwarf willow thickets or on small limbs over running water. EGGS: 2, pure white.

Distribution.— Mountain districts of western United States; north to Idaho, Montana; east to eastern base of Rocky Mountains in Wyoming, western Nebraska, Colorado, New Mexico, and western Texas; west to the Sierra Nevadas (casually to Oakland, California); southward over greater part of Mexico; breeds throughout its general range; winters in Mexico and Central America.

The season for Hummingbirds opened with the locust blossoms next door, which were for days a mass of bloom and buzzings of birds and bees. But when the fragrant flowers began to fall and the ground was white with them, one bird settled herself on our Honeysuckle, and there took her daily meals for a month. Being not six feet from where I sat for hours every day, I had the first good opportunity of my life to learn the ways of one of these queer little creatures in feathers.

After searching and much overhauling of the books, I made her out to be the female Broad-tailed Hummingbird, who is somewhat larger than the familiar Ruby-throat of the East. Her mate, if she had one, never came to the vine; but whether she drove him away and discouraged him, or whether he had an independent source of supply, I never knew. She was the only one whose acquaintance I made, and in a month's watching I came to know her pretty well.

In one way she differed strikingly from any Hummingbird I have seen; she alighted, and rested frequently and for long periods. Droll enough it looked to see such an atom, such a mere pinch of feathers, conduct herself after the fashion of a big bird; to see her wipe that needle-like beak, and dress those infinitesimal feathers, combing out her head plumage with her minute black claws, running the same useful appendages through her long, gauzy-looking wings, and carefully removing the yellow pollen of the honeysuckle blooms which stuck to her face and throat. Her favorite perch was a tiny dead twig on the lowest branch of a poplar tree, near the honeysuckle. There she spent a long time each day, sitting usually, though sometimes she stood on her little wiry legs.

But though my Hummingbird friend might sit down, there was no repose about her; she was continually in motion. Her head turned from side to side, as regularly, and apparently as mechanically, as an elephant waves his great head and trunk. Sometimes she turned her attention to me, and leaned far over with her large, dark eyes fixed upon me with interest and curiosity. But never was there the least fear in her bearing; she evidently considered herself mistress of the place, and reproved me if I made the slightest movement, or spoke too much to a neighbor. If she happened to be engaged among her honey-pots when a movement was made, she instantly jerked herself back a foot or more from the vine, and stood upon nothing, as it were, motionless, except the wings, while she looked into the cause of the disturbance, and often expressed her disapproval of our behavior in squawky cries.

The toilet of this liliputian in feathers, performed on her chosen twig as it often was, interested me greatly. As carefully as though she were a foot or two, instead of an inch or two, long, did she clean and put in order every plume on her little body, and the work of polishing her beak was the great performance of the day. This member was plainly her pride and her joy; every part of it, down to the very tip, was scraped and rubbed by her claws, with the leg thrown over the wing, exactly as big birds do. It was astonishing to see what she could do with her leg. I have even seen her pause in mid-air and thrust one over her vibrating wing to scratch her head.

Then, when the pretty creature was all in beautiful order, her emerald-green back and white breast immaculate, when she had shaken herself out, and darted out and drawn back many times her long bristle-like tongue, she would sometimes hover along before the tips of the fence-stakes, which were like laths, held an inch apart by wires,— collecting, I suppose, the tiny spiders which were to be found there. She always returned to the honeysuckle, however, to finish her repast, opening and closing her tail as one flirts a fan, while the breeze made by her wings agitated the leaves for two feet around her. Should a blossom just ready to fall come off on her beak like a coral case, as it sometimes did, she was indignant indeed; she jerked herself back and flung it off with an air that was comical to see.

When the hot wind blew, the little creature seemed to feel the discomfort that bigger ones did: she sat with open beak as though panting for breath; she flew around with legs hanging, and even alighted on a convenient leaf or cluster of flowers, while she rifled a blossom, standing with sturdy little legs far apart, while stretching up to reach the bloom she desired.

Two statements of the books were not true in the case of this bird: she did not sit on a twig upright like an Owl or a Hawk, but held her body exactly as does a Robin or Sparrow; and she did fly backward and sideways, as well as forward.

Toward the end of June my tiny visitor began to make longer intervals between her calls, and when she did appear she was always in too great haste to stop; she passed rapidly over half a

dozen blossoms, and then flitted away. Past were the days of loitering about on poplar twigs or preening herself on the peach tree. It was plain that she had set up a home for herself, and the mussy state of her once nicely kept breast feathers told the tale,— she had a nest somewhere. Vainly, however, did I try to track her home: she either took her way like an arrow across the garden to a row of very tall locusts, where a hundred Hummingbirds' nests might have been hidden, or turned the other way over a neighbor's field to a cluster of thickly grown apple trees, equally impossible to search. If she had always gone one way I might have tried to follow, but to look for her infinitesimal nest at opposite poles of the earth was too discouraging, even if the weather had been cool enough for such exertion. OLIVE THORNE MILLER.

RUFOUS HUMMINGBIRD

Selasphorus rufus (*Gmelin*)

A. O. U. Number 433

Other Name.— Rufous Hummer.

General Description.— Length: male, $3\frac{7}{10}$ inches; female, $3\frac{9}{10}$ inches. Prevailing color of male, red; female is bronze-green above and whitish below.

Color.— ADULT MALE: Crown, dull metallic bronze or bronze-green; rest of upper parts, including lores, eyes and ear regions, and greater part of tail, *plain cinnamon-rufous*, the back sometimes glossed with metallic bronze-green; tail-feathers with an area of purplish or bronzy dusky; wings, dark brown-slate or dusky, faintly glossed with purple; chin, and throat, brilliant metallic scarlet; chest, white passing through cinnamon-buff into cinnamon-rufous on rest of under parts; the under tail-coverts, whitish basally; thigh tufts, white; bill, dull black; iris, dark brown. ADULT FEMALE: Above, metallic green; chin, throat, and chest, dull white, the throat usually with tips of some of the feathers metallic orange-red or scarlet (changing to golden and greenish), sometimes with a large patch of this color; rest of under parts, cinnamon-rufous; fading into dull buffy whitish on breast and abdomen; under tail-coverts pale cinnamon-rufous or cinnamon-buff centrally, broadly margined with white or buffy white.

Nest and Eggs.— NEST: In ferns, bushes, trees, and vines, near creeks; constructed of willow-floss and soft plant-down, covered over with lichens. EGGS: Not distinguishable from those of the Ruby-throat, except that they average slightly smaller.

Distribution.— Western North America; north to coast district of Alaska as far as latitude 61°; east to Alberta, Montana, Wyoming, Colorado, and New Mexico; breeding southward to higher mountains of New Mexico and Arizona, northern California and southward along coast to Santa Clara County and in Sierra Nevada at least to Calaveras County, as well as locally throughout the general range; in winter some migrating southward to Lower California, Santa Barbara Islands, and over highlands of Mexico.

Photo by W. L. Finley and H. T. Bohlman

RUFOUS HUMMINGBIRD

I was standing on the hillside one May morning when I saw a Rufous Hummingbird come down like the rush of a rocket. He turned and whirled up till I could see but the tiniest speck in the sky. Then he dropped headlong like a real meteor, his gorget puffed out and his tail spread wide. He veered just above the bushes with a sound like a whip drawn through the air

and as the impetus carried him up, a high-pitched musical trill sounded above the whir of his wings. Again and again he swung back and forth, evidently in an effort to win the heart of some lady. He must have won her, for I think this was one of a pair that had their home in the Virginia creeper at the side of the house.

I have never known just what to think of the male Hummingbird. He is an enthusiastic lover, but he disappears entirely when the nest is finished and incubation begins. I think he was never known to give his wife a hand in caring for the young birds. I found it the same with the Rufous Hummingbird as Bradford Torrey says of his Ruby-throat: he drops out of existence leaving a widow with twins on her hands. Perhaps the male Hummingbird is not an intentional shirk and deserter. I think that somewhere back through the generations of Hummingbird experience it was found that such bright colors about the home were unmistakable clues for enemies. Therefore, it is the law of self-protection for him to keep away from the nest.

WILLIAM L. FINLEY

Photo by Mrs. Granville Pike Courtesy of Nat. Asso. Aud. So

MALE RUFOUS HUMMINGBIRD

Washington

ORDER OF PERCHING BIRDS

Order *Passeres*

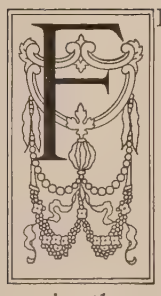
THE Perching Birds are the largest group of related birds, and include nearly all of our familiar land birds and more than one-half of the entire number of species. In this order bird life reaches its highest development: the nervous system is acutely sensitive; the special senses, noticeably those of hearing and sight, are keenly developed; the circulation and the respiration are rapid; and the temperature of the body is the highest among animals.

Usually the Perching Birds have four toes, which are so arranged that the bird can grasp a branch or other perch. The hind toe is never raised above the level of the others. The vocal organ is well developed, and according to this development the order is divided into the suborders *Oscines*, or Song Birds, and *Clamatores*, or Songless Perching Birds (Screamers). Twenty-three families of the order occur in the United States and Canada.

The young of this order are born weak, helpless, and nearly naked. They are brooded and cared for by the parents for some time in the nest. After they are a few days old they are covered with down, and later this is replaced with feathers — the juvenal plumage. A more or less complete molt follows in the autumn. The adults also molt in the fall. Some adults have an entire change of plumage in the spring, while others have little or none.

TYRANT FLYCATCHERS

Order *Passeres;* suborder *Clamatores;* family *Tyrannidæ*



FLYCATCHERS belong to the group of songless perching birds. This classification seems a trifle inaccurate, as several of the members have very sweet songs. But the real significance of this appellation is comparative rather than positive; their vocal organs are less highly developed than are those of other perching birds and consequently their singing ability is more limited.

The Tyrant Flycatchers are exclusively American birds. Superficially, both in general appearance and in habits, they resemble the Flycatchers of the eastern hemisphere, but the latter belong to a different family and are more nearly related to our Thrushes. There are about four hundred species and these are most numerously developed in the tropics. In the United States there are thirty species and subspecies. Among this large number of species there are few highly differentiated forms; very much the greater number are birds of dull coloration, with very slightly modified structural characters. The species grade into one another almost imperceptibly.

Some of the general family characteristics are: the shield-like scales that cover the lower section of the short legs; feet small and weak; feathers in the tail numbering twelve; primaries numbering ten, the first well developed and often the longest; wing-coverts more than half the length of the secondaries; shoulders broad; neck short; head large; bill broad and flattened, gradually tapering to a sharp point, abruptly bent downward near the tip, and notched at the beginning of the bend; nostrils near the base of the bill, small and round and not very well concealed by bristly feathers; the gape large and the bristles at the corners usually well developed, sometimes so excessively developed that they extend beyond the tip of the bill when pressed forward. The period of incubation averages about twelve days.

The Flycatchers for the most part inhabit the open country and prefer to live about gardens, orchards, and sparsely timbered hillsides. Several species are not averse to human neighbors and make their nests in the crannies of buildings, while a number of others build in covered sites, such as hollow trees, under bridges, or under the overhanging bank of a stream. Many of the species show a strong liking for the vicinity of water, and are frequently to be found in the neighborhood of streams or pools, and in dry parts of the country every watering trough by the roadside has its attendant Flycatcher. This fondness for the vicinity of water doubtless arises from the fact that insects are abundant in such situations. Most of the species are migratory, though some of them within rather narrow limits.

These birds are extremely agile upon the wing, and turn in the air with extraordinary facility, which enables them to catch the flying insects, of which their food largely consists. Their favorite method of feeding is to perch upon a post, stake, or leafless twig, and from this outlook watch for their prey, and then to sally forth and snap the luckless insect in midair, often with a sharp click of the bill and a sudden turn back toward the perch.

One prominent characteristic, which is more or less marked in the whole family of Flycatchers, is the pugnacity they display toward Crows, Hawks, or other large birds. This is especially shown when the intruders come about the nests of Flycatchers; then they are attacked with the greatest vigor and driven off. This trait is particularly marked in Kingbirds, so that if a pair of them nest in the vicinity of a poultry yard they serve as protectors of the poultry.

Farmers and horticulturists have never accused the Flycatchers of doing any harm to their crops. The most that has been said against them is that certain of the larger species feed to a harmful extent upon honeybees. Stomach examinations, however, do not sustain this accusation. Honeybees do not form an important percentage of the food, and, moreover, a large proportion of those eaten are drones or males, of which, as is well known, there is in every hive a superfluity. The real harm, if any, done by this family of birds is in the destruction of predacious and parasitic hymenoptera, or four-winged flies. Of the former, however, so few are eaten that their loss is of no practical importance. Some parasitic hymenoptera are taken by most Flycatchers, and with certain of the smaller species they amount to a considerable percentage of the food. While theoretically this is harmful to the interests of husbandry, the precise amount of the damage is impossible of calculation. The parasites themselves often destroy useful insects, including other parasites, or are themselves destroyed by other insects, so that the question of the final result involves a problem so delicate and complicated as to preclude exact solution.

SCISSOR-TAILED FLYCATCHER

Muscivora forficata (*Gmelin*)

A. O. U. Number 443

Other Names.— Swallow-tailed Flycatcher; Texan Bird of Paradise.

General Description.— Length, 14 inches. Head, pale gray; body, gray but back with a pinkish tinge; tail and wings, blackish, with white markings. Tail, deeply forked; bill, hooked. Tail of male, 7 to 10 inches; that of female, shorter.

Color.— Crown and hindneck, clear pale gray, the center of crown with a small concealed patch of orange-red, underlaid behind and laterally by white; back and shoulders, light gray, usually suffused with pinkish red or ocher-yellowish (more commonly the former), the shoulders and lower back sometimes almost uniformly the former color; rump, brownish-gray, the feathers darker centrally or with darker shaft-streaks; upper tail-coverts black or dusky, margined with grayish; six middle tail-feathers, black, margined terminally with pale grayish-brown or whitish; three outermost (on each side) white (usually tinged with salmon-pink, sometimes deeply of this color), the terminal portion mostly black, this occupying between terminal third and terminal half of third feather; wings, dusky, the coverts margined with gray or grayish-white, the primaries narrowly edged with light gray; lores, mixed dusky and whitish; upper portion of sides of head, varying from light gray (like crown) to dusky; cheeks, space below eye, chin, and throat, white, shading into very pale gray on chest and breast; sides and flanks, salmon color to almost Saturn red, the under tail-coverts, similar but much paler and more pinkish; under wing patch, bright orange-red, under wing-coverts salmon-color or salmon-pink; inner webs of wing feathers broadly edged with dull pinkish-white; bill, deep horn brown; iris, brown. YOUNG: Similar to adults, but crown-patch missing.

Nest and Eggs.— NEST: Placed in small trees or

Courtesy of the New York State Museum

OLIVE-SIDED FLYCATCHER
Nuttallornis borealis (Swainson)

KINGBIRD *Tyrannus tyrannus* (Linnaeus)

All ½ nat. size

CRESTED FLYCATCHER
Myiarchus crinitus (Linnaeus)

PHOEBE *Sayornis phoebe* (Latham)

bushes, preferably mesquite, 5 to 20 feet up; constructed of plant stems, weeds, thistledown, cotton or wool felted and lined with moss or cotton; sometimes built entirely of cotton. EGGS: 4 to 6, generally 5, white, or creamy, marked with chestnut, brown, and lilac.

Distribution.— Breeds from southern Texas to southern Kansas, less commonly in southwestern Missouri, western Arkansas, and western Louisiana; winters from southern Mexico to Panama; accidental in Illinois, Florida, Virginia, Maryland, New Jersey, Connecticut, Vermont, Manitoba, Keewatin, and even in Mackenzie River valley.

This is one of the most picturesque and graceful of American birds; and he has individuality, too, which would make him conspicuous without these physical peculiarities. His picturesqueness is due chiefly to his long and strikingly marked tail, which he is likely to open and shut when he is excited about anything. This ornament also serves to accentuate the grace or the erratic character of the bird's aërial gyrations, many of which apparently are indulged in simply for the fun of the thing. One of these is a rapidly executed series of ascents and dives, the bizarre effect of which is heightened by the spreading and closing of the streaming tail-feathers, the performance being accompanied by harsh screams emphasized at each crest of the flight wave. Again and for no apparent reason he will interrupt a slow and decorous straight-line flight by suddenly darting upward, uttering at the same time an ear-piercing shriek. Altogether there is something rather uncanny about much of this bird's conduct; and perhaps its unusual ways are responsible for the Mexican peasants' belief that its food is the brains of other birds, which of course, is a hideous slander.

Perhaps, however, this Mexican myth may have been inspired by the bird's fearless attacks upon White-necked Ravens, Caracaras, and other predacious birds, which it will pursue with the utmost fury and persistence, often lighting on their backs, and doing them all the damage it can by savage stabs with its bill. But this is also a performance of our common Kingbird, whom nobody has ever accused of the crime charged against the Scissor-tail. It is an interesting fact that this dare-devil form of attack should be a characteristic of these two members of the same family; also that the Kingbird has a flight trick which suggests the hysterical upward dash of his long-tailed western cousin.

The animal food of the Scissor-tailed Flycatcher amounts to 96 per cent. of the stomach contents, practically all of which is insects and spiders. The vegetable food is composed of small fruits and seeds.

Of the animal food, beetles amount to nearly 14 per cent. and form a rather constant article of diet. Less than one per cent. belong to theoretically useful families. The others are practically all of harmful species. Among these are snout beetles, or weevils, and cotton-boll weevils. Stink-bugs and squash-bugs are among the bugs eaten. Grasshoppers and crickets are evidently the favorite food; they are eaten every month, with a good percentage in all except April. The average for the year is 46 per cent.— the highest for any Flycatcher. In general, grasshoppers and crickets are eaten to the greatest extent by the ground-feeding birds, such as the Meadowlark, while the Flycatchers take the flying bugs. In this case the rule seems to be reversed. It needs but little study of the food of the Scissor-tailed Flycatcher to show that where the bird is abundant it is of much economic value. Its food consists almost entirely of insects, including so few useful species that they may be safely disregarded. Its consumption of grasshoppers is alone sufficient to entitle this bird to complete protection.

SCISSOR-TAILED FLYCATCHER
(⅓ nat. size)

KINGBIRD

Tyrannus tyrannus (*Linnæus*)

A. O. U. Number 444 See Color Plate 67

Other Names.— Field Martin; Bee Martin; Beebird; Tyrant Flycatcher.

General Description.— Length, 8 inches. Upper parts, black and gray; under parts, white. Tail, square or slightly rounded.

Color.— Crown and sides of head (except cheeks), black (slightly glossy), the crown with a large concealed patch of orange or orange-red, sometimes intermixed with yellow on margins, underlaid laterally and behind by white; hindneck, slaty-black, passing into plain slate color on sides of neck, back, rump, shoulders and lesser wing-coverts, the feathers of lower rump margined terminally with pale gray or grayish-white; upper tail-coverts, black, margined with white; *tail, black, abruptly tipped with white*, the lateral feathers margined with white for some distance from tip especially the exterior one; wings, dusky, the middle and greater coverts and secondaries edged with white, the primary coverts and primaries more narrowly edged with pale gray; cheeks and under parts, white, the chest shaded with gray, the sides of chest with a distinct gray patch; under wing-coverts, white or yellowish-white terminally, pale brownish-gray basally, those along edge of wing, dusky broadly margined with white; bill, black; iris, brown; legs and feet, brownish-black.

Photo by H. T. Middleton

YOUNG KINGBIRDS

Nest and Eggs.— NEST: Frequently in the orchard, sometimes in tall sycamores near streams, a substantial structure of twigs, weed stalks, grass, roots, particles of wool and down well combined and symmetrically edged, lined with feathers, horsehair, fine rootlets, and wool. EGGS: 3 or 4, white to pale pink with strong bold spots of umber and chestnut.

Distribution.— North and South America; breeds from southern British Columbia, southern Mackenzie, southern Keewatin, northern Ontario, central Quebec, and Newfoundland south to central Oregon, northern New Mexico, central Texas, and central Florida; winters from southern Mexico to Colombia, British Guiana, Peru, and Bolivia; casual in Cuba in migration; accidental in Greenland.

The Kingbird's remarkable courage and persistent aggressiveness in attacking his natural enemies, especially Hawks and Crows, have made his name one to conjure with in the feathered world. Perhaps no American bird, great or small, displays these characteristics in a more marked degree: certainly none makes a more conspicuous display of them; for a Kingbird in hot pursuit of a Hawk or a Crow, dashing down on the bigger bird and striking him repeatedly with his bill, or even actually alighting on his enemy's back and clinging there to do all the damage he can, and screaming incessantly meanwhile, is one of the real spectacles of bird-life. Other birds, to be sure, attack Crows and Hawks, but none are so fearless and persistent as is the Kingbird. In this sense he is a veritable king among birds, though the scientists slander him when they give him a name implying that he is a tyrant, for he attacks consistently only birds he has good reason to hate. Of course, he is likely to declare himself if other birds loiter too near his brooding mate, but any self-respecting bird would do that.

Kingbirds are industrious and skillful flycatchers, a practice which causes them to perch invariably on dead limbs, tree-tops, fence posts,

Courtesy of Am. Mus. Nat. Hist.

KINGBIRD (½ nat. size)

Remarkable for his courage and persistency in attacking his enemies

or similar points of vantage, from which they can get an unobstructed view of at least the immediate surroundings. To such selected perches they are likely to return after dashing flights to capture passing insects. The bird's characteristic note is a sharp and shrill chattering cry, frequently uttered in flight, the phrase (if it may be so termed) being emphasized at its end by a swift upward flutter.

The Kingbird furnishes a conspicuous illustration of the saying, "Give a dog a bad name and everybody will kick him." In this instance, the bad name, "Bee Martin," has been furnished by careless or ignorant observers who insist that the bird destroys honeybees, whereas the careful investigations of experts in the United States Bureau of Biological Survey prove conclusively that no less than 85 per cent. of its food consists of insects, mostly of a harmful nature. It eats the common rose-chafer or rose-bug, and, more remarkable still, it devours blister-beetles freely. As to honeybees, an examination of 634 stomachs showed only 61 bees in 22 stomachs, and of these 51 were useless drones. On the other hand, it devours robber-flies, which catch and destroy honeybees. Grasshoppers and crickets, with a few bugs and some cutworms, and a few other insects make up the rest of the animal food. The vegetable food consists of fruit and a few seeds. The very slight damage that the bird does should count for nothing when compared with the great service it renders not only in destroying noxious insects, but by its persistent warfare upon Hawks and Crows, which often affords efficient protection to nearby poultry yards and young chickens at large.

Photo by H. K. Job Courtesy of Outing Pub. Co.

A KINGBIRD FAMILY

GRAY KINGBIRD

Tyrannus dominicensis (*Gmelin*)

A. O. U. Number 445

General Description.— Length, 9 inches. Upper parts, gray; under parts, white.

Color.— *Above, plain gray,* the feathers of crown with indistinct shaft-streaks of darker, with a large concealed patch of orange or orange-red underlaid laterally and behind with white; upper tail-coverts, deep grayish-brown margined with gray or rusty brownish; tail, dusky grayish-brown, the feathers margined terminally with pale brownish-gray or dull whitish, their outer webs indistinctly edged with gray, the outermost narrowly edged with whitish; wings, deep grayish-brown, the coverts margined with light gray or grayish-white (the edgings broader and whiter on inner secondaries), the primary coverts and primaries, dusky grayish-brown, very narrowly edged with pale gray; loral region, dusky intermixed with gray; sides of head, dusky or dull blackish, with a few very narrow shaft-streaks of pale grayish; cheeks and under

parts, white, the center of chest faintly shaded with pale gray passing into deeper gray on sides of chest, sides, and flanks; the under tail-coverts, usually tinged with pale yellow; under wing-coverts, yellowish-white or pale primrose yellow; inner webs of wing-feathers edged with dull yellowish-white; bill, black; iris, brown.

Nest and Eggs.— NEST: Usually in low mangroves or live oaks but sometimes high in trees, near streams; a frail structure of twigs and grass, lined with small plant stems and moss. EGGS: 3 or 4, creamy or pinkish-white, spotted and splashed with dark brown and lilac-gray.

Distribution.— Breeds from Georgia, southeastern South Carolina, Florida, and Yucatan through the Bahamas and West Indies to northern South America; winters from Jamaica and Haiti southward.

This Tyrant Flycatcher much resembles the more common Kingbird, but may be distinguished from that species by its lighter color and larger size. It is a common inhabitant in many of the West India Islands and is also found in numbers in Florida. Rarely it breeds as far north as South Carolina. The Gray Kingbird prefers the country immediately adjoining the coast, and, although it wanders into the pine woods at times, it is rare to find one more than a mile from salt water. In Old Tampa Bay many of them spend the summer, and one cannot pass along the shore or row a boat for any great distance among the numerous islands without finding one perched on some snag or bush-top. In this territory the nests are built in mangrove bushes and usually over the water. The nest is of rootlets, and occasionally one may be found possessing a meager lining of horsehair. It is so loosely woven that as a rule one may see, through the structure, the form of the eggs within. As an indication of their abundance in a favorite locality one writer speaks of finding twelve occupied nests while paddling a canoe along a four-mile stretch of mangrove-fringed shore-line.

The Gray Kingbirds reach Florida early in April, and after the completion of the breeding season remain but a short time before they again brave the rolling wastes of the Mexican Gulf in their flight to their winter home in the Lesser Antilles and Central America.

T. GILBERT PEARSON.

Courtesy of Nat. Asso. Aud. Soc.

NEST AND EGGS OF GRAY KINGBIRD

ARKANSAS KINGBIRD

Tyrannus verticalis *Say*

A. O. U. Number 447

Other Names.— Bee Martin; Bee Bird.

General Description.— Length, 9 inches. Upper parts, gray; under parts, gray and yellow.

Color.— *Crown and hindneck, plain gray,* the crown with a large concealed patch of orange-red underlaid behind and laterally by an admixture of white and yellow; back, shoulders, and upper rump, light yellowish-olive, the lower rump grayer, with feathers darker centrally; upper tail-coverts, black, sometimes with indistinct grayish margins; tail, black, the outer web and shaft of outermost feather wholly white or yellowish-white, except (sometimes) part of terminal portion; wings, deep to dark grayish-brown, all the feathers narrowly margined with paler; *ends of long quills with sharp points;* lores, mixed gray and dusky, sides of head (except lower portion), gray, darker than color of crown; lower front portion of sides of head, region below the eyes, the cheeks, chin, and upper throat, white or grayish white, passing gradually into pale gray on lower throat and chest; rest of under parts, canary yellow, paler on under tail-coverts, shading into light yellowish-olive on sides, flanks, and upper breast; under wing-coverts, pale yellowish-gray margined with pale yellow; inner webs of wing-feathers edged with very pale grayish-yellow or dull yellowish-white; bill, black or brownish-black; iris, brown.

Nest and Eggs.— NEST: In trees, bushes from 5 to 50 feet up, but usually low and in fence posts, corners of houses or nearly any handy spot; built of twigs, leaves, weed bark, wool, cocoons, hair, string, down, rags, and paper. EGGS: Commonly 4, creamy white rather boldy marked with burnt umber and some lavender, chiefly around large end.

Distribution.— Western North America; north to North Dakota, Montana, northern Idaho, and southern British Columbia (Vancouver Island), occasionally to Manitoba, southern Assiniboia, and Alberta (?); east regularly to western Minnesota, eastern South Dakota and Nebraska, middle Kansas, Oklahoma, and western Texas; breeding southward to northern Lower California, southern Arizona, and northern Chihuahua; southward during migration through western Mexico; accidental in Iowa, Wisconsin, Missouri, Maine, New York, New Jersey, and Maryland.

The Arkansas Kingbird is one of the commanding personalities of the western bird-world. Of his presence and his very firm convictions concerning his importance and the deference due to his points of view, you are made well aware immediately you enter his domain, for he always keeps himself very much in evidence. That he is actually quarrelsome is denied by his admirers, who contend that much of his assertiveness is essentially good-natured, and that he doesn't mean really to be ugly except to his natural enemies, Hawks, Crows, Owls, and such like. All and sundry of these he attacks with the most savage fury and persistence, often—like his eastern cousin of the same name and like the picturesque Scissor-tailed Flycatcher — actually lighting on their backs as they fly, and doing them all the injury he can with his beak and claws. He has many tiffs with other birds, though probably some of these are less serious than they appear.

Whatever he undertakes to do he seems to

Drawing by R. I. Brasher

ARKANSAS KINGBIRD (½ nat. size)

Whatever he undertakes to do, he seems to think it important to yell more or less about it

think it important to yell more or less about it. His attacks upon his enemies are accompanied by incessant screaming, and even when he dashes from his perch on telegraph wire or fence post to capture a passing insect, he is likely to announce his success by a shriek of victory as he

Photo by Mrs. Granville Pike Courtesy of Nat. Asso. Aud. Soc.

ARKANSAS KINGBIRD

Through eastern Oregon it commonly nests on a crosspiece of a telephone or telegraph pole

sails back to his station. In these aërial performances he keeps his tail spread to its full width, thereby showing plainly the white outer feathers. It seems natural enough that such a bird should prefer the open country, where he can have plenty of room for his operations, but "through eastern Oregon, where trees are scarce, the Arkansas Kingbird commonly nests on a crosspiece of a telephone or telegraph pole. At Ashland and some of the other towns in northern Oregon they prefer a similar site along the busy street. A farm-building or even a gate-post, wherever two beams come together so the nest can be wedged in, is not an unusual site." (W. L. Finley, MS.)

This bird has been accused in California of eating honeybees to an injurious extent. It was said that the bird lingered near the hive and snapped up the honey-ladened bees as they returned from the field. This statement is not borne out by the facts. Its animal food is open to adverse criticism in only one point — the useful beetles amounting to 5½ per cent. But even if it be admitted that the destruction of these is harmful to man's interests, the amount of damage is so small as to be completely overbalanced by the good done in other directions. The vegetable food, which is less than 10 per cent. of the entire food of the bird, is of so little economic importance that it may be dismissed without further comment. On the whole the Arkansas Kingbird is one of the most useful birds in the region where it is found.

CRESTED FLYCATCHER

Myiarchus crinitus (*Linnæus*)

A. O. U. Number 452 See Color Plate 67

Other Names.— Great Crested Flycatcher; Great Crested Yellow-bellied Flycatcher; Snake-skin Bird.

General Description.— Length, 8½ inches. Upper parts, olive; under parts, gray and yellow. Crown-feathers, erectile.

Color.— Above, plain olive, the crown usually slightly browner, with feathers darker centrally; middle pair of tail-feathers and outer webs of others, deeper brownish-olive with paler olive edgings, the outer web of lateral tail-feathers sometimes narrowly edged with dull whitish; inner web of tail-feathers (except middle pair) *cinnamon-rufous,* the outermost two or three usually with a narrow streak of brown next to shaft; wings, dusky grayish-brown, the middle and greater coverts margined terminally with pale buffy olive, the secondaries edged with the same, the edgings broader and more whitish (sometimes yellowish-white) on inner secondaries; basal half of primaries narrowly edged with cinnamon or cinnamon-rufous; sides of head and neck, gray, tinged with olive; *chin, throat, and chest, plain gray; under parts of body,* light straw *yellow,* the sides of breast and front of sides, pale yellowish-olive; under wing-coverts, pale yellow; inner webs of wing-feathers, broadly edged with pale cinnamon-rufous; bill, horn-brown; iris, brown.

Nest and Eggs.— Nest: In tree or stump cavity or Woodpecker hole, from 6 to 50 feet up; constructed of grass, rootlets, bits of bark, hair, and pine needles; remarkable for the fact that it is almost always encircled with a cast-off snake skin. Eggs: 4 to 8, creamy to deep buff covered with blotches and lengthwise pen lines of brown and purple.

Distribution.— Eastern United States and southern Canada; north to western New Brunswick, New Hampshire, northern New York, southern Quebec, northern Ontario, and Manitoba; breeding southward to central Florida and westward through Gulf States to Texas; south in winter to Cuba and through eastern Mexico and Central America to Colombia; accidental in Wyoming and Cuba.

This bird is famous for its curious habit of almost always including in the material of which it builds its nest part or all of a cast snake skin. Just why the bird does this, no clear-thinking and candid person will attempt to say. To a certain school of nature-writers the reason is, of

course, as plain as a pike-staff — the snake skin is employed deliberately by the bird to frighten its enemies away from its nest. But who are the bird's natural enemies? Chiefly certain Hawks

Courtesy of Am. Mus. Nat. Hist.

CRESTED FLYCATCHER (½ nat. size)

Famous for its curious habit of weaving a snake skin into its nest

and Owls, and various other nest-robbing birds like the Crow, Blue Jay, Cuckoo, and Catbird, in addition to red squirrels and snakes. Now, no Hawk or Owl which preys upon birds is afraid of a snake; in fact, snakes are killed and eaten by most of these birds. The other feathered nest-robbers mentioned would be afraid of a live snake, but why should they fear a fragment of dried snake skin? It is exceedingly doubtful if they would even recognize it as the sometime covering of an enemy. And the same applies to the red squirrel; while it seems a bit improbable, to say the least, that a snake would be much terrified by the skin of one of its own kind. Furthermore, what right have we to suppose that this particular bird, and this one alone, knows that other birds are afraid of snakes; that it alone is capable of the intellectual process which would prompt this deliberate deception? For no other bird does the same thing, or anything like it. And finally, how could the snake skin, in part or even in whole, certainly have this effect, since the nest, in which it is often so interwoven as to be almost invisible even in a strong light, is always placed in a cavity where there is little light or none at all?

No, we do not know why this bird follows this peculiar practice. There is no apparent good reason for it; most likely it does not bespeak any design whatsoever, but, as Mr. Burroughs says, reflects simply a whim or fancy.

Yet all who know this Flycatcher well probably will admit that there is a suggestion of the uncanny about him. His characteristic call, a discordant and peremptory *wheep,* is not only unmusical, but has an unearthly ring, as though the bird were trying to conjure gnomes and hobgoblins. And this impression is heightened by the bird's elusive and mysterious manners, and its evident desire to be let alone.

GEORGE GLADDEN.

The food of Crested Flycatchers shows about 94 per cent. of animal matter and 6 per cent. of vegetable. Beetles constitute one-sixth of the food, and of these one-fourth of 1 per cent. are useful species. The remainder are mostly of an injurious character, some of them very harmful. Among them are the notorious cotton-boll weevil, the strawberry weevil, and the plum curculio. While records do not indicate any special preference for the harmful beetles, they do show that these are eaten as often as the average of the different species.

Bugs constitute 14.26 per cent. of the diet;

Photo by S. A. Lottridge

CRESTED FLYCATCHERS

Young in the nest, mother on guard on a limb nearby

they belong to the usual families of stinkbugs, tree-hoppers, leaf-hoppers, and cicadas, with a few assassin bugs. Grasshoppers, crickets, and katydids seem to be among the favorite foods of the Crested Flycatcher. Moths and their larvæ are the largest item of the food — over 21 per cent. Adult moths and butterflies are not a favorite food with birds in general; it is evident that the larvæ, or caterpillars, are generally preferred to the adult insects, but the fact that the adults can fly and so can be taken on the wing apparently recommends them to Flycatchers.

The Crested Flycatcher does little if any harm. It is a very desirable bird to have about the orchard or garden, since it does not attack any cultivated crop. As its natural nesting site is a cavity in a partially decayed tree, it has often been induced to nest in properly constructed boxes, if such are placed in the orchard or other suitable situations. Mr. Burroughs says: "I have seen it nesting in boxes on Henry Ford's farm in Michigan." (MS.) Thus it can be induced to live in orchards and woodlands not now frequented by it because of the lack of nesting sites, and eventually, no doubt, a substantial increase in its numbers can be effected.

PHŒBE

Sayornis phœbe (*Latham*)

A. O. U. Number 456 See Color Plate 67

Other Names.— Phœbe Bird; Pewee; Bridge Pewee; Water Pewee; Barn Pewee; Bean Bird; Pewit Flycatcher; Dusky Flycatcher.

General Description.— Length, 7 inches. Upper parts, grayish-olive; under parts, yellowish-white. Crown-feathers, erectile; tail, emarginate.

Color.— Crown, sides of head, and hindneck dark sooty-brown; back, shoulders, lesser wing-coverts, rump, and upper tail-coverts, plain grayish-olive, paler behind; tail, dusky grayish-brown, the outer webs of feathers passing into light grayish-olive on edges, the outer web of exterior feathers broadly edged with olive-whitish; wings, dusky with pale grayish-olive edgings, these most conspicuous on greater coverts and secondaries, on innermost of the latter broader and more whitish; a slight admixture of dull whitish on lores (especially upper margin) and on lower eyelid; sides of neck, similar in color to back but slightly paler; under parts, dull yellowish-white, the chin (sometimes upper throat also) intermixed with dusky grayish, the sides of chest and breast, light grayish-olive; under wing-coverts, yellowish-white or pale primrose-yellow, tinged with pale grayish, the coverts, near margin of wing dusky-grayish centrally; inner webs of wing-feathers, edged with very pale grayish-buffy; bill, black; iris, brown.

Nest and Eggs.— Nest: Beneath barn eaves, bridges, culverts, ledges, in fact nearly anywhere that affords protection from the weather; constructed of mud, grass, vegetable fibers, lined with some hair, grass, and feathers, and nearly always decorated exteriorly with green moss. Eggs: 3 to 8, normally 5, pure white, rarely speckled at large end with brownish.

Distribution.— Eastern United States and more southern British Provinces; north to Maine, northern New York (Adirondack region), northwestern Ontario; Keewatin and southern Mackenzie; west, at least occasionally, to Athabasca (Little Slave Lake), eastern Wyoming, eastern Colorado, northeastern New Mexico and western Texas; breeding southward to highlands of South Carolina, Louisiana, etc.; winters chiefly within the United States (mostly south of 37°) but migrating to Cuba and eastern and central Mexico; accidental in southern California.

Photograph by C. M. Oswalt Courtesy of Outing Pub. Co.

NEST AND EGGS OF PHŒBE

This is another bird whose nesting habits have been modified by the appearance in its habitat of man and his handiwork. Before his advent

Courtesy of Am. Mus. Nat. Hist.

PHŒBE (⅔ nat. size)

The bird's confiding ways and gentle manners have won real affection from its human neighbors

Phœbe placed her nest generally in a niche of a shelving cliff, and it was a beautiful little creation of moss and lichens whose color was so nearly that of the immediate surroundings that it was almost invisible. The bird still builds occasionally in such places even when man-made structures are not far away; but most frequently the nest is found on a sheltered projection from a barn or house (often on a ledge under a porch where it may be almost within arm's reach), or on a beam under a bridge. From the last mentioned site the bird is often called the "Bridge Pewee," though the true Pewees are of a different species.

In this practice we see another instance of what may be termed imperfect adaptability. Evidently Phœbe is intelligent enough to discern some of the advantages of building in or near human habitations. Not the least of these advantages is that she thereby receives protection from her natural enemies, the Hawks and Owls, and predatory animals such as skunks, squirrels, and weasels. Also her natural food (which is composed wholly of insects) is probably more plentiful in the new location than in the old. What she seems to be unable to learn, however, is that a nest of green moss and mud is not exactly inconspicuous when it is tucked away in the angle between a beam and a rafter which are painted red or brown. This is a fair illustration of the occasional blindness, and in this instance, it would seem, the color-blindness, of instinct.

Sometimes Phœbe will take possession of the abandoned nest of a bird of another species, such as a Barn Swallow or a Robin. One observer has reported a nest that was built under a woodshed close to a cord-wood saw, the noisy operation of which did not always frighten the sitting bird from her eggs.

Phœbe is no musician; in fact the bird's invariable two-syllabled call, from which it gets its name, and which sometimes suggests petulance or impatience, becomes a trifle monotonous, when its reiteration is frequent and at brief intervals, which is often the case. Nevertheless the bird's confiding ways and gentle manners have won the real affection of its human neighbors, who should realize as well that it is very useful as a destroyer of noxious insects. In its pursuit of this prey it shows all of the flight-skill and speed which are characteristic of its species. Like its relatives it generally selects a perch on a dead limb or fencepost whence it has an unobstructed view of the immediate surroundings, and it is likely to return to this perch after each darting sally. The sharp snapping of its bill as it seizes an insect is often plainly audible, and it has a trick of switching its tail sideways which is also characteristic.

Photo by A. A. Allen

PHŒBE

At its nest on a cliff

It seems hardly necessary to say anything in favor of a bird already firmly established in the

affections of the people, but it may not be amiss to point out that this good will rests on a solid foundation of scientific truth. In the animal food of the Phœbe there is such a small percentage of useful elements (less than 3 per cent.) that they may be safely overlooked, while of the vegetable food it may be said that the products of husbandry are conspicuous by their absence. To its credit are cotton-boll weevils, strawberry weevils, corn-leaf beetles, both spotted and striped cucumber beetles, ants, grasshoppers, locusts, moths and caterpillars, spiders, ticks and thousand-legs. Let the Phœbe remain just where it is. Let it occupy the orchard, the garden, the dooryard, and build its nest in the barn, the carriage house, or the shed. It pays ample rent for its accommodations.

GEORGE GLADDEN.

SAY'S PHŒBE

Sayornis sayus (*Bonaparte*)

A. O. U. Number 457

Other Name.— Say's Pewee.

General Description.— Length, 7½ inches. Upper parts, brownish-gray; under parts, buffy-gray and cinnamon-buff. Tail, emarginate.

Color.—Above, plain brownish-gray, the crown and hindneck decidedly darker; upper tail-coverts, dusky-grayish, usually margined with paler; tail, brownish-black, the outer web of lateral feather edged with whitish; wings, deep brownish-gray with pale brownish-gray edgings, these broader and approaching dull whitish on inner secondaries and terminal portion of greater coverts; sides of head and neck, similar in color to upper portions, changing gradually below into the pale buffy brownish-gray of chin and throat; chest and sides of breast, light buffy brownish-gray, the center portion of chest usually more strongly tinged with buff; *rest of under parts, cinnamon-buff;* under wing-coverts, pale buff or cream-buff; inner webs of wings edged with buffy-whitish; bill, black; iris, brown.

Nest and Eggs.— NEST: Usually beneath bridges, in abandoned dwellings, in caves, under ledges, or sometimes in hollow trees; composed of grasses, weeds, bark, moss, wool, cocoons, spiders' webs, lined with feathers and hair. EGGS: 3 to 6, sometimes with a few reddish-brown dots at large end.

Distribution.— Western North America; north to Alaska, Yukon Territory, and southern Mackenzie; east to Manitoba, eastern Wyoming, western Kansas, middle Kansas (more rarely), and (in winter) to coast of Texas — accidentally to Wisconsin and northeastern Illinois; breeding southward to southern New Mexico, southern Arizona, and Lower California — probably breeding in northern and perhaps central Mexico; southward in winter over northern and central Mexico.

In manners, at least, there is some resemblance between Say's Phœbe and its cousin of the eastern States; for both are essentially unassuming and rather timid little birds, and both are apt to nest in protected niches of man-made structures. The western bird doubtless does this less often than the eastern, probably for the very good reason that it has fewer opportunities. Therefore, it is often found in country where there are ledges — which furnish the natural nesting places of the entire tribe — and especially in the great cañons, where its favorite perch is likely to be a big bowlder whence it makes its sallies after passing insects. Nevertheless, Say's Phœbe is common about ranch buildings, mining sheds, and railroad stations. According to Mr. Dawson it is only within the past twenty years that it has taken to nesting in buildings in Yakima County, Washington. Like the eastern Phœbe again, this species shows a strong attachment for the home site it has once used, and will return to build its nest in the same locality or even the same spot.

The western bird is, however, rather more restless than the eastern one, and seems more given to flirting its tail and raising its crest when there is no particular occasion for doing either. Its note is a plaintive two-syllabled utterance, somewhat like that of the eastern Wood Pewee. Its diet is composed almost wholly of insects taken on the wing in true Flycatcher style, and in common with other members of its family (as well as the Hawks and Owls) it ejects from its mouth, in the form of pellets, the hard and indigestible parts of its food.

Its animal food, over 99 per cent. of its entire diet, is the factor that fixes this bird's economic position. The item of this most open to objection is predatory beetles amounting to about 6 per cent. This item is higher with Say's Phœbe than with any other of the Flycatchers, but still is small as compared with the injurious insects eaten. In spite of the fact that the bird eats these useful insects its work on the whole is beneficial, and it should be protected.

BLACK PHŒBE

Sayornis nigricans (*Swainson*)

A. O. U. Number 458

Other Names.— Western Black Pewee; Black-headed Flycatcher.

General Description.— Length, 7¾ inches. Upper parts, sooty-slate; under parts, sooty-slate and white. Tail, emarginate.

Color.— General color, plain dark sooty-slate, the head darker (almost black), the back, shoulders, rump, and upper tail-coverts brownish-slate color; *abdomen, anal region, and under tail-coverts, white,* the last sometimes frequently streaked centrally with dusky; middle wing-coverts, broadly tipped or terminally margined with brownish-gray; greater coverts, edged with brownish-gray and tipped with the same or paler brownish-gray; secondaries, edged with pale brownish-gray or dull white; outer web of lateral tail-feathers edged with white; under wing-coverts dark sooty-gray or brownish-slate, their outer webs mostly white and inner webs extensively white at tip; inner webs of wing feathers edged with pale brownish-gray; bill, black; iris, brown.

Nest and Eggs.— NEST: In sheltered situations, under bridges, eaves, ledges in wells or deserted cabins or houses; a rather large structure of mud pellets, dried grass, bits of wood and vegetable fiber, and hair, lined with feathers. EGGS: 3 to 6, plain white or rarely finely and sparsely dotted with chestnut chiefly around larger end.

Distribution.— Pacific coast district of United States; breeds from southwestern Oregon through California (west of the Sierra Nevada) to Cape San Lucas district, Lower California, eastward through southern California, southern Arizona, and southern New Mexico to central Texas, and over Mexico, except humid Atlantic coast district, to Yucatan.

The Black Phœbe is a little larger than the Phœbe of the East. The black and white of his plumage are sharply contrasted and his friends consider him the handsomest of the Flycatchers. His manners are quiet; he is so demure that he is almost staid. The comforts of civilization are matters of indifference to him. You may meet a Black Phœbe in town to-day and find his nest under the eaves of a kitchen, and to-morrow you may find his brother living just as contentedly in a lonely cañon.

His note is a quiet liquid *hip,* and is usually heard as he darts from perch to perch.

The laboratory investigation of this bird's food showed that about 99½ per cent. of its food consisted of animal matter. Useful beetles amounted to about 3 per cent. of the food. Other beetles of harmful or neutral species reached

Photo by W. L. Finley and H. T. Bohlman

BLACK PHŒBE

Just returning with food for young

10½ per cent. Four-winged flies form the largest item of the food, and for a short time in midsummer ants constitute quite a notable part; but various wild bees and wasps make up the bulk. No honeybees were found.

Bugs in various forms, flies, moths, and caterpillars complete his menu. While the Black Phœbe does not improve every opportunity to destroy harmful insects, it certainly neglects many chances to eat useful ones. The destruction of a few predacious beetles, dragon flies, and parasitic four-winged flies are the sum of its sinning. Throughout its range, it is welcomed and protected.

OLIVE-SIDED FLYCATCHER

Nuttallornis borealis (*Swainson*)

A. O. U. Number 459 See Color Plate 67

Other Name.— Nuttall's Pewee.

General Description.— Length, 7½ inches. Upper parts, dark gray; under parts, white and gray.

Color.—Above, plain slaty-olive or dark smoke-gray, the feathers (especially on crown) darker centrally; tail, dusky, the outer webs of feathers edged with grayish-olive; wings, sooty blackish, the middle coverts margined terminally with grayish-olive, the greater coverts narrowly edged with the same (passing into whitish terminally), the secondaries edged (except basally) with grayish-white, more broadly on inner secondaries; sides of head (including cheeks) and neck plain slaty-olive, like upper parts; chest (*except center line*), sides of breast, sides, and flanks, brownish-gray, tinged with olive, *streaked with darker;* rest of under parts, white (often tinged with pale yellow), the sides of throat and center portion of chest streaked with brownish-gray, the under tail-coverts with broad V-shaped markings of the same; under wing-coverts, brownish-gray narrowly edged with paler; a conspicuous patch of *soft, fluffy white or yellowish-white feathers above flanks* (*on sides of rump*), usually concealed but capable of being spread over secondaries of the closed wing; bill, brownish-black; iris, brown.

Nest and Eggs.— Nest: Saddled on branch or in fork of coniferous tree, generally at great height, 40 to 60 feet, in burned-over tracts; less compactly constructed than the Wood Pewee's, but of similar materials with the addition of some moss. Eggs: Normally 3, identical in color and markings with those of that bird, but larger.

Distribution.— North and South America; breeds from central Alaska, southern Mackenzie, southern Keewatin, central Quebec, and Cape Breton Island and south in the coniferous forests of the western United States to southern California, Arizona, and western Texas, and also northern Michigan, New York, and Massachusetts south along the higher Alleghenies to North Carolina; migrates through Mexico and Central America; winters in northern South America.

The Olive-sided Flycatcher is a bird of very wide distribution. It is included by Dr. Chapman in his book about the birds of the Eastern States, and Mrs. Bailey gives it a paragraph in her work devoted to the ornithology of the West, mentioning especially its occurrence in the fir-tree belt on Mount Shasta, "where its voice is one of the commonest forest sounds, as the evening shadows gathered over the noble trees under which we were camped." It has a habit, not common with the Flycatchers, of perching in the topmost branches of a tree. Without identifying the bird, Thoreau gave this good description of its characteristic flycatching performance: "Looking round for its prey and occasionally changing its perch, it every now and then darts off (Phœbe-like), even five or six rods, toward the earth to catch an insect, and then returns to its favorite perch. If I lose it for a moment, I soon see it settling on the dead twigs again and hear its *till, till, till.*" Apparently Thoreau did not see the bird dart almost if not quite perpendicularly upward, which it often does.

The bird's loud, characteristic and rather commanding call has been variously transliterated. Dr. Chapman thinks he says "Come right here, come right here," in a peremptory manner, and to Mr. Hoffman the syllables resemble *pi-pee'* or *pip, pi-pee'*. Captain Bendire compared the call to that of the Wood Pewee, and says that the syllables are *hip-pui whe,* while a gold miner in the Cascade Mountains, emerging from the bowels of the earth into the sunshine quite naturally thought that the bird shouted to him, "Three cheers!"

In the first analysis the food of the Olive-sided

Flycatcher was found to consist of 99.95 per cent. of animal food and 0.05 per cent. of vegetable.

Bees, wasps, and ants are the staff of life of the Olive-sided Flycatcher and form a large percentage of the food of each month. Beetles amount to about 6 per cent., less than half of 1 per cent. of which are useful. The bird shows a very decided fondness for hive bees, but not the special preference for drones manifested by Kingbirds. The Olive-sided Flycatcher would be a menace to the beekeeping industry, were it abundant in the thickly settled portions of the country.

As it eats no vegetable matter worth mentioning, its record must rest on its insect food, and honeybees constitute entirely too large a quota for the best economic interests. At present it probably does little harm, except when a number of the birds take up their residence in the vicinity of an apiary and make bees a part of their regular diet. The food of this bird is interesting, as it represents the food of a typical Flycatcher; with the exception of the vegetable matter everything it eats could be taken on the wing. Caterpillars, spiders, and millepeds, although found in the stomachs of most Flycatchers, are entirely absent from that of the Olive-sided.

COUES'S FLYCATCHER

Myiochanes pertinax pallidiventris (*Chapman*)

A. O. U. Number 460

General Description.— Length, 8 inches. Upper parts, deep smoke-gray; below, light smoke-gray and yellowish-white.

Color.—*Above, deep smoke-gray,* the crown slightly darker, with feathers darker centrally; wings and tail, grayish-brown, the outer webs of tail-feathers passing into light grayish-olive or olive-grayish on edges, the primaries very narrowly and indistinctly edged with the same; secondaries, edged (except basally) with pale grayish, sometimes approaching dull grayish-white; middle wing-coverts, margined terminally or tipped with grayish-olive or buffy-grayish, the greater coverts edged and tipped, or terminally margined, with same; sides of head and neck similar in color to back, etc., but paler, the loral region somewhat intermixed with whitish; *chest and sides, light smoke-gray,* but usually somewhat tinged with buffy-yellowish, the throat similar but paler, fading into dull whitish on chin; center of breast, abdomen, and under tail-coverts, pale yellowish-white, the latter usually with grayish V-shaped basal or central markings; under wing-coverts, buffy; bill, dusky-brown to nearly black, yellowish below; iris, brown.

Nest and Eggs.— Nest: Saddled on branch of oak or pine, from 15 to 30 feet up, closely resembling the Wood Pewee's but larger; constructed of bits of vegetable fiber catkins, a few dried leaves, fine grass tips, and covered exteriorly with lichens fastened on with cobwebs. Eggs: Generally 3, creamy-buff wreathed with browns and lilac-gray around large end.

Distribution.— Mountains of southern and central Arizona, south into Mexico; accidental in Colorado.

This comparatively little-seen Flycatcher occurs chiefly in uninhabited parts of Arizona, especially in pine and oak timber-growing cañons and gulches. Its manners are essentially Flycatcher-like though its flights are more extended and it is given to sailing about treetops. Its note is like that of the Olive-sided Flycatcher, though the last syllable is prolonged and delivered with a rising inflection. The bird's habitat is chiefly in Mexico.

WOOD PEWEE

Myiochanes virens (*Linnæus*)

A. O. U. Number 461 See Color Plate 68

Other Names.— Pewit; Pewee; Pewee Flycatcher.

General Description.— Length, 6¼ inches. Upper parts, olive; lower parts, grayish-olive and yellowish-white. Tail, emarginate.

Color.—Above, plain olive, slightly paler on rump and upper tail-coverts, slightly darker on crown, where the feathers are darker centrally; tail, deep grayish-brown, the outer webs of feathers passing into lighter grayish-brown or olive along edges; wings, dusky, the middle and greater coverts tipped with pale grayish and with still paler gray terminal margins, the secondaries edged (except basally) with whitish, these edgings broader on inner secondaries; sides of head and neck, similar in color to back, etc., but rather lighter, especially on

lower portion; a narrow whitish eye-ring (interrupted on upper eyelid); lores, intermixed with whitish; chin and throat, dull white or yellowish-white; chest (at least laterally) and sides of breast, pale grayish-olive, becoming still paler on sides and flanks; rest of under parts, yellowish-white, the longer under tail-coverts with a central wedge-shaped mark (mostly concealed) of pale olive; under wing-coverts, pale grayish-olive margined into yellowish-white; bill, brownish-black; iris, deep brown.

Nest and Eggs.— NEST: Usually saddled on the horizontal limb of a deciduous tree, in clearings or edge of deep woods, from 10 to 60 feet up; shallow, constructed of fine grasses, strips of bark, bits of vegetable or moss fibers, decorated exteriorly with lichens fastened with cobwebs, with thick felted sides and thin bottom; indistinguishable from a knot on branch. EGGS: 2 to 4, commonly 3, creamy white with a wreath of chestnut, warm brown, and lavender around large end.

Distribution.— North and South America; breeds from Manitoba, Ontario, southern Quebec, and Prince Edward Island to southern Texas and central Florida, west to eastern Nebraska; winters from Nicaragua to Colombia and Peru; casual in Colorado; accidental in migration in Cuba.

"The note of the Pewee is a human sigh," says Mr. Burroughs, and the bird's two-syllabled call frequently conveys very distinctly that idea.

Courtesy of S. A. Lottridge

NEST AND EGGS OF WOOD PEWEE

Drawing by R. I. Brasher

WOOD PEWEE (½ nat. size)

Often the bird seems to be saying, "Dear me!" in a tone which is plaintive and resigned rather than petulant or impatient. Again the syllables are *pee-a-wee,* the first and second slurred and descending; the third of a somewhat higher pitch and more accented, the phrase having distinctly a questioning inflection. About the middle of August the call is likely to be reduced to two syllables, uttered with a falling inflection and strongly slurred. Always the tone is finer and sweeter than is that of the Phœbe, and the bird itself is much more retiring and timid. Its natural habitat is the deep woods (though it is often found in shade trees near houses), where its half-mournful, half-pensive little plaint seems to be part of the silence, and may be heard throughout the daylight hours. Between sunset and darkness the bird often delivers a sort of twittering song of some length and variety of notes, uttered while it is flitting about in apparent excitement the cause of which is not evident.

The Pewee is an industrious flycatcher and follows its craft much after the manner of the Phœbe, that is, by making frequent sallies after passing insects, and usually returning to the same perch. That it is not above taking insects which are not on the wing, is shown by its fluttering pauses above a twig or branch from which it evidently snaps up a bug of some kind, and its not infrequent plunges into the grass, apparently for the same purpose. Like all of the Flycatchers its motions are very swift and certain, as well as graceful; it seems never to miss its prey. It does not flirt its tail as does the Phœbe, from

which it may also be distinguished by its smaller size and its plainly marked wing-bars. On the other hand it is considerably larger than the Chebec, or Least Flycatcher.

A curious characteristic of the Pewee is its apparent indifference about betraying the whereabouts of its nest. Many birds consider this a subject of the utmost secrecy, and act accordingly, absolutely refusing to go to their nests as long as an intruder is in sight. Others become tremendously excited and indignant under the same conditions; the wrath and courage of the Brown Thrasher, when his home is threatened, are beautiful to behold. But Pewee is likely to sit quite still and regard you with a somewhat puzzled air as you approach; and if you will remain motionless probably either the male or the female will go directly to the nest, even if it be only a few yards away. Whether this trait reveals confidence or indifference, it might be difficult to say; but anyone who has seen the bravery and rage with which the little bird attacks a prowling red squirrel will not accuse it of lack of solicitude in the presence of a real enemy. GEORGE GLADDEN.

Photograph by A. A. Allen

A WOOD PEWEE AT ITS NEST ON A DEAD BRANCH

The animal food of the Wood Pewee is made up of insects, spiders, and millepeds, and amounts to about 99 per cent. of its total food; the vegetable consists of berries and seeds. The beetles eaten include such harmful species as the clover-leaf weevil, the plum curculio, the corn weevil, and the rice weevil, besides several species of the *Scolytidæ*, a family which includes some of the worst enemies of forest trees.

Bees, wasps, and ants are eaten largely. The Flycatchers, as a group, take a considerable number of useful parasitic species among the bees, wasps, and ants which they eat. The Wood Pewee is probably the worst sinner of the family in this respect. It is safe to say that about one-fourth of the bees, wasps, and ants eaten by the Wood Pewee are of parasitic species. This, however, is probably not so great a fault as may at first appear, and does not necessarily condemn the bird. Flies are the most regular and constant constituent of the food. Among these are horse-flies, robber flies, syrphus flies, tachina flies, and long-legged crane flies. The great bulk of this food, however, belonged to the house-fly family. The syrphus and tachina flies are useful insects, but the great majority of members of the fly families are a nuisance and many of them pests, and it is a benefit to the world to have their numbers reduced; in this respect the Wood Pewee is doing a good work. Moths and caterpillars are eaten by the Wood Pewee every month of its stay in the North, but not quite so regularly nor in such quantities as flies.

Among the bugs which are eaten in small and rather irregular quantities, are tree-hoppers, leaf-hoppers, negro-bugs, stink-bugs, the squash-bug family, assassin bugs, and water striders. All of these are harmful in their habits except the assassin bugs, which destroy caterpillars and other insects, and the water striders, which have no economic significance.

The one unfavorable feature concerning the food of the Wood Pewee is that it eats too many parasitic bees and wasps. There is no doubt that all birds which prey upon bees and wasps destroy some of the useful species, but the proportion in the food of this bird is greater than in other birds whose food has been investigated. As these insects are for the most part smaller than the more common wasps and bees, it would

seem natural that they should be preyed upon most by the smaller Flycatchers, which very likely accounts for the fact that the Wood Pewee eats more of them than the Kingbirds. But, even so, the bird does far more good than harm. The loss of the useful bees and wasps can be condoned when it is remembered that with them the bird takes so many harmful or annoying species.

The Western Wood Pewee (*Myiochanes richardsoni richardsoni*) closely resembles its eastern relative in coloration, size, and habits; but its call differs in quality and inflection from that of the eastern bird, the single syllable suggesting the word *deer* or *tweer*. Its nest is deeper and better cupped and is not coated with lichens.

While the Western Wood Pewee inhabits orchards, it does not go there for fruit, but only in search of the insect enemies of the trees. It eats but few useful insects, and does not, as far as investigation shows, attack any product of industry. If, under exceptional circumstances, it destroys honeybees, the occasions are so rare that the bird should not be blacklisted.

YELLOW-BELLIED FLYCATCHER

Empidonax flaviventris (*Baird*)

A. O. U. Number 463 See Color Plate 68

General Description.— Length, 5½ inches. Upper parts, greenish-olive; under parts, yellowish-olive and yellow.

Color.—Above, plain greenish-olive, the feathers of crown slightly darker centrally; tail, deep grayish-brown, with outer webs of feathers passing into greenish-olive on edges; wings, dull black, the middle and greater coverts broadly tipped with pale olive-yellow, the secondaries edged with the same, the primaries dusky grayish-brown very narrowly and indistinctly edged with paler; a pale yellow eye-ring, less distinct but scarcely interrupted on middle of upper eyelid; lores mixed pale yellowish and dusky-grayish; rest of sides of head and sides of neck similar in color to back but slightly paler, *gradually fading below into pale yellow, tinged with olive, on chin and throat; chest and sides of breast, light yellowish-olive,* gradually becoming paler toward flanks; rest of under parts, pale yellow; under wing-coverts, primrose yellow, the outermost coverts with dusky-grayish centers; inner webs of wing-feathers, edged with pale grayish-buffy; bill, brownish-black, wholly pale yellowish below; iris, brown.

Nest and Eggs.— Nest: Usually in upturned roots of trees, or in a fallen tree trunk, in a bed of moss, on deep shady mountain slopes; constructed principally of moss and lichens lined with fine rootlets, pine needles, and fine grass. Eggs: 3 to 5, white, finely spotted with rusty or chestnut.

Distribution.— Eastern North America, north to Newfoundland, southern Labrador, Quebec, Ontario, and Manitoba, accidentally to southwestern Greenland; breeding southward to Maine, northern New York, mountains of Pennsylvania, northern Indiana(?), northeastern Illinois(?), northern Minnesota, and North Dakota; migrating southward through eastern Mexico and Central America to Panama; occasional in migration in western Florida.

The Yellow-bellied Flycatcher is another of the lesser-known members of the species. It frequents both tall tree-tops and thickets, and its habits resemble, in a general way, those of its tribe. Its note, which suggests the syllable *pea,* is uttered by both the male and the female.

So retiring are its habits that the Yellow-bellied Flycatcher is seldom brought into contact with man, and hence its food can have only restricted economic interest. Its bill of fare includes insects of a number of species which are injurious to garden, orchard, or forest, as the striped squash beetle, several species of weevils, tent-caterpillars, and leaf-rollers.

WESTERN FLYCATCHER

Empidonax difficilis difficilis *Baird*

A. O. U. Number 464

General Description.— Length, 5½ inches. Upper parts, brownish-olive; under parts, buffy-olive and yellow.

Color.—Above, plain brownish-olive; tail, grayish-brown, the outer webs of feathers passing into light grayish-olive; wings, dusky, the middle and greater coverts rather broadly tipped with pale grayish-olive (forming two distinct bands), the secondaries edged (except basally) with the same; primaries, grayish-brown, very narrowly and indistinctly edged with

Courtesy of the New York State Museum

WOOD PEWEE *Myiochanes virens* (Linnaeus)

ADULT

ALDER FLYCATCHER
Empidonax traillii alnorum Brewster

ACADIAN FLYCATCHER
Empidonax virescens (Vieillot)

IMMATURE

LEAST FLYCATCHER *Empidonax minimus* (W. M. & S. F. Baird)

YELLOW-BELLIED FLYCATCHER
Empidonax flaviventris (W. M. & S. F. Baird)

All ⅔ nat. size

paler; a broad eye-ring of pale buffy-yellow, narrower but scarcely interrupted on middle of upper eyelid; lores, pale yellowish intermixed or suffused with dusky; rest of sides of head and sides of neck similar in color to upper parts, gradually fading below into the pale straw-yellow of chin and throat; chest and sides, pale buffy-olive, fading toward flanks; *rest of under parts pale (straw) yellow;* under wing-coverts pale (primrose) yellow becoming more buffy on edge of wing; inner webs of wing-feathers edged with pale buff; bill, brownish-black, wholly yellowish below; iris, brown.

Nest and Eggs.— NEST: In alders, bushes, stumps, root cavities, under banks, rocky ledges, and even in deserted Woodpecker holes; usually near water; constructed of root stems, vegetable fibers, bark, cobwebs, and grass and often coated with fresh green moss and lined with horse-hair and feathers. EGGS: 3 or 4, creamy white, spotted or ringed with chestnut and brownish-pink.

Distribution.— Western North America, from eastern base of Rocky Mountains and western Manitoba to Pacific coast; north to coast district of Alaska; breeding southward to Santa Barbara Islands, California, northern Lower California, Arizona, southern New Mexico and southwestern Texas; winters in Mexico south to Cape San Lucas, and Tres Marias Islands.

This is one of the group of small olivaceous Flycatchers the accurate identification of which requires sharp eyes and the faculty for noticing comparatively slight differences of color and contour. It is a very common bird in California, especially west of the Sierra Nevadas, and therefore there is no lack of opportunity to study it carefully.

One of the bird's peculiarities will be found to be the wide latitude of choice it displays in selecting a nesting site; for it may make its home high up in a tree, or on a ledge, or in a deserted Flicker's excavation, or a hollow tree, or in an unoccupied shanty, or on the ground in a tangle of the roots of trees, or even on a stranded stump in the middle of a river. Moreover it may build in low country on or near the bank of a stream, or in mountain forests at a considerable altitude. The only kind of country which it seems consistently to shun is the open plain.

The bird's call has the general character of that of most of the wood Flycatchers, the notes resembling the syllables *peet* and *weet,* to which is added a mournful little plaint uttered when the nest is discovered. When that happens, the bird is likely to flutter about the intruder, snapping its bill with considerable energy. The ordinary call note is usually accompanied by a sharp flirt of the tail. The bird's manner of hunting is very similar to that of the other Flycatchers.

In the laboratory investigation of the food of the Western Flycatcher it was proved that he eats less than three-fourths of 1 per cent. of vegetable matter. Only one other Flycatcher, the Western Wood Pewee, eats so little vegetable food. Beetles amount to about 8 per cent. and are nearly all harmful, the exception being a few ground beetles. Bees, wasps, and ants form the largest constituent of the food of this as of most other Flycatchers; they amount to over 38 per cent. Bugs amount to nearly 9 per cent. of the food; flies to a little more than 31 per cent. and include the crane flies, the soldier flies, and the house flies. Moths and caterpillars amount to about 7 per cent. Neither the farmer nor the fruit grower has anything to fear from the Western Flycatcher. Practically it eats no vegetable food, and its animal diet contains less than the normal proportion of useful elements. It should be rigidly protected at all seasons.

ACADIAN FLYCATCHER

Empidonax virescens (*Vieillot*)

A. O. U. Number 465 See Color Plate 68

Other Names.— Green-crested Flycatcher; Small Green-crested Flycatcher; Green Flycatcher; Small Pewee.

General Description.— Length, 6 inches. Color above, grayish olive-green; under parts, yellowish-white.

Color.—Above, plain grayish olive-green, slightly darker and duller on crown; tail, grayish-brown, the outer webs of the feathers passing into grayish olive-green on edges; wings, darker grayish-brown or dusky, the middle and greater coverts broadly tipped with pale buff (*forming two conspicuous bands*), the secondaries edged with the same; a rather broad eye ring of dull yellowish-white, narrower but scarcely interrupted on upper eyelid; lores, dull whitish, suffused with dusky, especially near front of eyes; sides of head otherwise and sides of neck similar in color to back, fading gradually below into the dull yellowish-white of chin and throat; under parts, dull yellowish-white, passing into primrose-yellow behind (whole under parts usually tinged with this color, especially laterally), the chest and sides shaded with pale grayish-olive; under wing-coverts, rose-yellow; inner webs of wing-feathers, edged with pale grayish-buffy; bill, dark horn-brown; iris, brown.

Nest and Eggs.— NEST: Semi-pensile, in forks of

saplings or bushes 5 to 20 feet up, in deep woods; rather carelessly constructed of grass, bark shreds, weed fibers, cocoons and catkins and lined with finer grass. Eggs: 2 or 3, pale yellow-buff, boldly specked and spotted around large end with chestnut-brown.

Distribution.— Eastern United States, north to Long Island, lower Hudson Valley, central New York, southern Ontario, southern Michigan, casually to Massachusetts and Connecticut; west to middle portion of Great Plains, from Nebraska to Texas; breeding southward to northern Florida and thence through Gulf States to Texas; southward in winter to the Bahamas and Cuba and through eastern Mexico, Central America, and Panama to Colombia and Ecuador.

The Acadian Flycatcher is one of the tamest of the wood Flycatchers, but because of its fondness for thickets and solitude, and its comparative inactivity, it is likely to be overlooked. A North Carolina observer noted its apparent liking for rhododendron growths near streams in that State, and another observer found the bird plentiful and calling freely in the great Okefinokee Swamp in Georgia, where its preference for solitude must have been pretty thoroughly satisfied. It perches generally not more than twenty feet from the ground. Its common call-note resembles the syllable *peet* and is uttered at brief intervals and emphasized by a flirting of the tail.

Photo by A. A. Allen

AN ACADIAN FLYCATCHER INCUBATING

Another note, which suggests the syllables *wicky-up,* seems to be articulated with some effort, with the bill elevated and the wings vibrating. One observer refers to the " startling exclamations and mysterious wing whistlings " of the bird; but the latter demonstration may be what Dr. Chapman refers to when he says: "A rarer note may be heard when the bird makes a short, fluttering flight. It resembles the soft murmuring of whistling wings."

Originally the name "Acadian " was given to all the members of the genus *Empidonax* of the Flycatchers. As the ornithologists progressed in their investigations, the other species were separated one by one from the Acadian. This statement explains the curious fact that no Acadian Flycatcher, despite its name, is found in the land of Evangeline.

The habits of the Acadian Flycatcher do not lead it to the garden or orchard, and its food has little direct economic interest. It does not catch many useful insects and, as it does not feed upon any product of cultivation, it may well be considered as one of those species whose function is to help keep the great flood of insect life down to a level compatible with the best interests of other forms of life.

TRAILL'S FLYCATCHER

Empidonax trailli trailli (*Audubon*)

A. O. U. Number 466

General Description.— Length, 5½ inches. Upper parts, olive; under parts, brownish-gray and white.

Color.— Above, plain olive, the crown and hindneck usually very slightly grayer or less brownish than back, etc., the rump and upper tail-coverts paler and more brownish-olive, the outer web of lateral feathers paler, sometimes approaching dull whitish; wings, darker grayish-brown, the middle and greater coverts

broadly tipped with pale olive, forming two conspicuous bands, of which the rear one is usually the paler, sometimes approaching dull olive-whitish; secondaries edged with olive-whitish; lores and an indistinct *eye ring, olive-whitish,* the former intermixed with dusky, especially near front angle of eye; rest of sides of head and sides of neck, similar in color to upper parts but slightly paler and grayer, gradually fading below into the white of chin and throat; chest and sides of breast, pale brownish-gray, the sides similar but paler, fading into pale olive on flanks; rest of *under parts, white,* tinged with pale primrose-yellow, at least on flanks, anal region, and under tail-coverts; under wing-coverts, pale primrose-yellow; inner webs of wing-feathers, edged with pale grayish-buff; bill, brown; iris, brown.

Nest and Eggs.— NEST: In forks of shrubs, or bushes near water, one to six feet up; loosely constructed of vegetable fiber, dried grass, and shreds of bark and lined with fine grass, fern down, and horsehair. EGGS: 2 to 4, pinkish or yellowish-buffy, spotted and specked around large end with light chestnut or umber-brown.

Distribution.— Western North America; east, northerly, to western portion of Great Plains, much farther southerly, breeding in Iowa (?), Missouri, southern Illinois, and probably elsewhere in central Mississippi valley; north to coast district of British Columbia and coast district of southern Alaska (?), northern Idaho, and Montana; south in winter over greater part of Mexico to Central America, Panama, and northwestern South America.

Traill's Flycatcher is not only energetic and rather restless, which are common characteristics of its tribe, but shows considerable pugnacity especially in the breeding season; then it is exceedingly likely to attack any other bird who comes near its nest. It is often found in willow or alder thickets along streams, both on high plains and in valleys, and in such surroundings its nest is usually built. One observer reports that, in all of the nests he found, the bird had placed the wool and other soft downy substances on the outside of the walls, and had lined the inside with rough stalks and dried grass. The bird has the characteristic Flycatcher habit of flirting its tail frequently and vigorously.

"In Oregon, Traill's Flycatcher commonly nests in a bush often three or four feet from the ground. The nest resembles that of a Yellow Warbler both in structure and often in location." (Finley.)

A variety of Traill's Flycatcher is found in eastern North America as well as in some of the western districts. The Alder Flycatcher (*Empidonax trailli alnorum*) is the brownest of the Flycatchers. It is rarely found within the depths of the forests; its preference is the swamps which are covered with a low growth of alders, willows, meadowsweet, and other low shrubs. There is a great deal of difference of opinion in regard to the Alder's song; but all the ornithologists agree that it is unlike that of any other Flycatcher. (See Color Plate 68).

The Traill's and Alder Flycatchers, one or the other of the two forms, occupy in the breeding season the whole of the United States except the southeastern part south of northeastern Texas, Arkansas, and the mountains of West Virginia, and extend north into British America. In winter they retire entirely beyond the southern boundary of the United States. No special differences in the food habits of the two have been noticed.

Photo by H. K. Job Courtesy of Outing Pub. Co.

ALDER FLYCATCHER

Female pausing at edge of nest

It is evident from their nesting habits that they are not likely to injure any product of industry, and the contents of the stomachs examined corroborate this observation.

LEAST FLYCATCHER

Empidonax minimus (*W. M.* and *S. F. Baird*)

A. O. U. Number 467 See Color Plate 68

Other Names.— Chebec; Sewick.

General Description.— Length, 5 inches. Upper parts, brownish-olive; under parts, whitish.

Color.— Above, plain brownish olive, the feathers of crown darker centrally; tail, grayish-brown, the feathers passing into light brownish-olive on edges; wings, dusky, the middle and greater coverts broadly tipped with pale grayish-brown, sometimes nearly white on tips of greater coverts, forming two distinct bands; the secondaries edged with the same or with dull yellowish-white; *a broad dull white or yellowish-white eye-ring;* lores, dull whitish suffused with dusky, especially near front angle of eye; rest of side of head and sides of neck similar in color to upper parts, gradually fading below into dull white of chin and throat; rest of under parts, dull white, tinged with pale (primrose) yellow posteriorly, the chest and sides shaded with pale grayish-brown, this deepest on sides of chest and sides of breast; under wing-coverts, pale yellowish-white; inner webs of wing-feathers edged with pale dull buffy; bill, dusky brown; iris, brown. YOUNG: More olive.

Nest and Eggs.— NEST: Placed in fork of sapling, occasionally on horizontal limb; a compact, neat structure of very fine gray bark, fibers, dandelion down, hair, and feathers, lined with fine narrow grasses and a few feathers. EGGS: 2 to 4, *pure white* or with a faint buffy tinge *unmarked.*

Distribution.— Breeds from west-central Mackenzie, southern Keewatin, Quebec, and Cape Breton Island south to central Montana, eastern Wyoming, central Nebraska, Iowa, Indiana, Pennsylvania, New Jersey, and in the Alleghenies to North Carolina; in migration west to eastern Colorado and central Texas; winters from northeastern Mexico and Yucatan to Panama and Peru; accidental in West Indies.

As its name indicates, the Least Flycatcher is the smallest of our common Flycatchers, but it makes up in energy of manner and emphasis of utterance what it lacks in size. As one observer remarked, the little fellow announces his name, *Che-bec,* with such a fervid jerk of both head and tail that he seems to be in real danger of snapping his head off. And this *che-becing* sometimes continues at a rate and with a persistency which almost make one wish that something of the kind might happen.

Courtesy of Am. Mus. Nat. Hist.

LEAST FLYCATCHER (nat. size)

Its energy compensates for its small size

However, the little chap has other characteristics which make one forget this fault. Both sexes, after they alight, have a trick of uttering a series of half-warbled, half-gurgled notes, accompanied by a quivering of the wings and tail, which is characteristic and very pleasing. And the male has a flight song, delivered usually just before dusk as he soars upward from a tree-top, which is interesting, if not highly melodious. Finally the bird makes a decided appeal on account of its obvious friendliness; for it is fully as confiding in its attitude toward its human neighbors as is the Phœbe, and seems especially fond of an apple orchard near a house as a nesting place.

The Chebec's habits are very like those of the other members of its family. It dashes after insects much in the manner of the Phœbe, and these sallies often are directed down into the grass, or against the trunks of trees when insects are seen in either of those places, whether in motion or at rest.

In the food of this Flycatcher there is no evidence of direct injury to the farmer or horticulturist. The bird eats no grain and practically

no fruit or other product of husbandry. It must be admitted that the bird destroys more useful insects than could be wished, but the injury it does in this way is comparatively slight. To his credit must be placed cotton-boll weevils, striped squash beetles, cucumber beetles, imbricated clover weevils, plum curculios, moths, and caterpillars.

LARKS

Order *Passeres;* suborder *Oscines;* family *Alaudidæ*

THE Larks are almost exclusively birds of the Old World. They are found in the northern part of Europe and Asia, in Africa, and in India; there is one species in Australia and another in North America. One species, the European Skylark, is a straggler to Greenland and the Bermudas; it has also been introduced into the United States. The Larks belong to the larger group of song birds and many of its members are excellent songsters; the European Skylark is especially renowned in this respect and has been the theme of many a writer both of poetry and of prose.

Among the structural characteristics of this family are: bill, variable in shape, but usually small, conoid, usually moderately thick or rather slender, sometimes very deep and compressed, in some species slender and much elongated; the nostril usually narrow, oblique, sometimes longitudinal, usually at least partly concealed by the feathers of the lores; the bristles at the corner of the mouth indistinct or obsolete; wing rather long, pointed, the longest primaries much longer than the secondaries; tail containing twelve feathers and variable in relative length but always shorter than wing, nearly even, double rounded, or notched; tarsus rather stout, variable as to relative length and covered with scales; middle toe shorter than tarsus but decidedly longer than the side toes which are nearly equal; claws of the forward toes slightly curved, usually short; that of the hind toe much longer, sometimes much elongated and nearly straight, occasionally much longer than the toe; the head usually crested (double crested or "eared" in the Horned Larks).

The Larks are usually streaked brownish above, whitish streaked with brown below, sometimes nearly plain brown, occasionally black or dusky. One species, the Horned Larks, has conspicuous frontal and cheek patches and jugular collar or crescent of black.

The members of this family are terrestrial in their habits. Their nests are built on the ground in open places and they feed on both grain and insects.

SKYLARK

Alauda arvensis *Linnæus*

A. O. U. Number 473 See Color Plate 69

Other Name.— European Skylark.

General Description.— Length, 7½ inches. Upper parts, brown streaked with blackish; under parts, buffy-white tinged and streaked with darker.

Color.— Above, wood-brown everywhere (except on wings and tail) streaked with blackish, the streaks broadest on crown, back, and rump, where margined with deeper brown, some of the back feathers with inner webs paler than the general color; lesser wing-coverts nearly uniform wood-brown; middle coverts, dusky centrally, otherwise brown passing on margins into pale buffy-brown or dull brownish-white; greater coverts with concealed portion dusky, passing toward edges through brown to pale brownish-buff, the secondaries similarly colored but the three innermost with greater part of exposed portion dusky grayish-brown; primaries dusky edged with pale buffy-brown, the outermost with outer web almost entirely pale buffy;

middle pair of tail-feathers dusky centrally, otherwise brown with paler margins; next pair similar in color but darker; others, dusky, the outermost with most of outer web and portion of inner web next to shaft (except basally) dull white, the next with outer web edged with white; a broad but not sharply defined stripe of pale brownish buff over eye; sides of head, brown, indistinctly streaked with darker; lores, dull whitish; cheeks, similar in color to sides of head but paler and more distinctly streaked; under parts, dull buffy white, strongly tinged on chest, sides, and flanks with tawny buff, the last two narrowly and rather indistinctly streaked with darker, the first more broadly and very distinctly and sharply streaked with brownish-black; under wing-coverts, pale wood-brown; bill, pale brownish-buffy; iris, brown; legs and feet, brownish.

Nest and Eggs.— NEST: Always on ground, under a tuft of grass, alongside a rock or clod of earth, in open fields; constructed of plant stems, few leaves, and grasses, and lined with finer blades of the latter. EGGS: 3 to 5, varying from grayish to greenish-white thickly sprinkled with spots of drab and grayish-brown.

Distribution.— Europe in general, except Mediterranean district; accidental in Greenland and the Bermudas, and introduced into the United States.

Several attempts have been made to introduce the Skylark from England into America, but all apparently have failed. In 1887 a few seemed to have taken up their abode in the fields near the old village of Flatbush (now a part of Brooklyn), on Long Island, and one nest with young was found that year in that vicinity. In 1895 another nest and a singing bird were found in the same locality, and according to a responsible observer the species was still represented in that vicinity in 1907, which seems to be the last authentic record of its appearance in this country. It is not improbable that some of the Larks may have lingered in the Flatbush region for a few years after the date named, but in all probability the species is now extinct in America.

HORNED LARK

Otocoris alpestris alpestris (*Linnæus*)

A. O. U. Number 474 See Color Plate 69

Other Names.— Northern Horned Lark; Winter Horned Lark; Shore Lark; Prairie Bird; Road Trotter; Wheat Bird; Spring Bird; Life Bird.

General Description.— Length 7¼ inches. Upper parts, pinkish-brown; under parts, white; a black crescent under each eye, and a third one on the breast.

Color.— ADULT MALE: A broad patch covering front half of crown and rear half of forehead and extending backward laterally to back of head, *where involving an elongated erectile tuft of narrow feathers, black;* front of forehead and broad stripe over eye, pale straw-yellow; lores, space below eye, and lower front part of sides of head, black, this black area bordered behind by light straw-yellow from lower rear margin of eye backward and downward across middle part of ear region, confluent below with the more decidedly yellow area covering chin and throat; upper and rear margin of sides of head, grayish-brown; a broad, somewhat crescentic, patch of black across upper chest invading center lower portion of throat; middle rear portion of crown, back of head, hindneck, lesser wing-coverts, and terminal portion (broadly) of middle wing-coverts, dull red, the upper tail-coverts similar but rather more cinnamon, the longer tapering coverts, grayish-brown edged with paler; back, shoulders, and rump, grayish-brown, the feathers edged with paler, and with a central wedge-shaped area of dusky, these markings larger on lower back and rump; wings (except lesser and middle coverts), deep grayish-brown with paler edgings, the outermost primary broadly edged with white; tail, black, the middle pair of feathers, grayish-brown with basal half (except centrally) more wood-brown margined with dull whitish, the two lateral pairs edged exteriorly with white (except basally), the outermost with terminal portion of inner web light grayish; under parts of body, white, the sides and flanks, dull red streaked with dusky; bill, black; iris, dark brown; legs and feet, black. ADULT FEMALE: Smaller and much duller in color than the male, the whole crown grayish-brown streaked with dusky, black area on side of head reduced in extent, duller black or merely dusky, the feathers narrowly tipped with dull whitish (except in worn midsummer plumage); throat patch also reduced in size; stripe, space over eye, throat, etc., paler and duller yellow; upper parts, more extensively streaked with little red showing on hindneck or upper tail-coverts; otherwise essentially as in the male. IMMATURE: Similar, but black obscured with yellowish.

Nest and Eggs.— NEST: On ground among moss or tuft of grass; constructed of grass and lined with finer blades and feathers. EGGS: 3 or 4, greenish-gray, thickly spotted with dark olive and pale lavender.

Distribution.— Breeding in northeastern British America, east of Hudson Bay, from Newfoundland, Labrador, and head of James Bay northward; in winter migrating west to Manitoba and the Mississippi valley (eastern portion, chiefly) and southward to Illinois, Ohio, and the Carolinas, casually to Louisiana and the Bermudas; accidental in Greenland.

Courtesy of the New York State Museum

SKYLARK
Alauda arvensis Linnaeus

PIPIT *Anthus rubescens* (Tunstall)
SPRING AUTUMN

All ½ nat. size

HORNED LARK *Otocoris alpestris alpestris* (Linnaeus)
MALE

PRAIRIE HORNED LARK *Otocoris alpestris praticola* Henshaw
MALE FEMALE IMMATURE

All ½ nat. size

The Horned Larks are small but hardy birds which frequent the open country and never live in forests. They are found in a great variety of situations, and feed along roads, in weedy or freshly plowed fields, on commons or other waste places, and in closely grazed pastures, meadows, and stubble fields. The beaches and salt marshes of the coasts, the lake shores, muddy flats, and swamps of the interior are thronged with them in fall and winter. In the Far West they live in hot desert valleys, on arid table-lands, on level grassy prairies, in the foothills, and even on bare mountain peaks.

They are readily distinguished from other small ground-loving birds. They are about the size of the Bluebird, their throats are white or yellow, there is a conspicuous black mark across the breast, and just above and behind the eyes are small pointed tufts of dark-colored feathers which are often erected. These black tufts or horns are perhaps the bird's most characteristic feature, and give origin to the common name "Horned Lark," by which it is known over most of the United States. "Shore Lark" is another common name, though a less apt one.

Many of the popular names of the Horned Larks emphasize the fact that they are preëminently terrestrial birds. During the day they run nimbly over the surface in quest of food; at night they roost in small companies on the bare earth. A clod or stone is a favorite perch, and they are rarely seen in a bush or tree. They nest early, the first clutch of eggs often being completed before the snow has disappeared. The nests are of the simplest description, in keeping with the artless character of the bird, being little cups of grass placed in slight depressions in the ground. Two or even three broods are raised in a year, a fact which sufficiently explains the great numbers of the species in some localities.

The flight of the Horned Larks is hesitant. They usually start hurriedly from the ground, uttering short, whistled notes, and it is very characteristic of them that frequently when disturbed they fly straight away for a short distance, only to swing around and alight near the starting point. In the mating season, however, they ascend to great heights and, like the Skylark, sing while on the wing. The song is neither complex nor loud, but it is wild, joyous, and full of the free spirit of the prairie and the open fields.

The birds thus characterized occur at some time of the year in all parts of North America, except the Aleutian Islands, the southern coastal portion of Alaska, extreme southeastern United States, and Central America. This vast range is occupied by only one species, which, however, varies so greatly in different localities that it has been separated into no fewer than twenty-one varieties or subspecies. During the breeding season these geographic forms are restricted to separate areas, but in winter, on account of the tendency of the southern races to wander and of the northern ones to migrate, the subspecies mingle, and as many as seven (Arizona) or eight (California) forms occur in one State. In summer in the United States (including Alaska) there are fifteen subspecies of Horned Larks, and in winter seventeen.

The several members of the family *Alaudidæ*,

Courtesy of Am. Mus. Nat. Hist.

HORNED LARK (½ nat. size)

which includes these forms, are interesting birds. Their habit of walking, instead of hopping, distinguishes them from many small ground birds. They have long hind claws, the prints of which in the snow or along the muddy shores of ponds often indicate where the Larks have been running. They molt but once a year, usually in August, while many birds molt twice and a few three times. The nuptial dress is acquired not by molting, but by the wearing away of the tips of the winter feathers, revealing the brighter colors beneath. The plumage of the Larks is generally neutral in tint, especially when viewed from above, and so harmonizes with their surroundings that it has a protective value, and enables the birds, in a measure, to escape the notice of enemies.

Examination of 1154 stomachs collected in all parts of the United States and southern Canada shows that the food of the Horned Larks consists of insects 20.6 per cent. and vegetable matter, nearly six-sevenths of which are weed seed, 79.4 per cent. The nestlings are highly insec-

tivorous, but soon after leaving the nest they become much more vegetarian than even the adults. The Horned Larks of California differ markedly in food habits from those of other parts of the country, being almost entirely vegetarian. It might appear that the California Horned Larks are decidedly injurious, but a large proportion of the grain is wild and hence of no value to the farmer. Of the grain eaten in the other States, buckwheat is a negligible amount, while practically all of the corn and oats eaten is waste. Although the Great Plains region, the most important wheat-growing area of the country and also the center of abundance of the Horned Larks, is represented by a proportionate number of the stomachs examined, yet the percentage of wheat eaten is only 1.66. In fact, the Larks of this region, considered separately, are even more insectivorous than those from east of the Mississippi, one-fourth of their food being animal matter.

The charges made by farmers that the Horned Larks eat newly sown grain are confirmed, but in attempting to estimate the economic value of the birds it must be borne in mind that the insects they eat compensate many fold for the seed grain taken, even considered bulk for bulk. As a matter of fact, however, the insects eaten constitute almost twice as great a proportion of the food as the grain, including even that which is waste.

It is impossible to estimate in dollars and cents the benefits resulting from the work of the Horned Lark, but it is none the less real on that account. Moreover, the services of the bird cost the farmer practically nothing save a small toll levied here and there upon seed grain. The Horned Lark by its services to agriculture earns a right to live, and deserves protection at the hands of man.

W. L. McAtee, in *The Horned Larks and their Relation to Agriculture.*

Photograph by A. A. Allen

PRAIRIE HORNED LARKS

CROWS AND JAYS

Order *Passeres;* suborder *Oscines;* family *Corvidæ*

CROWS and Jays are large to rather large birds. The bill is variable in shape but always long; the ridge on the top curves at the apex; it is never distinctly notched and usually not at all. The nostril is usually round and completely hidden under a tuft. There are distinct bristles at the corners of the mouth. The wing varies as to relative length: long and pointed in the Ravens and Crows; short and rounded in the Magpies and Jays. The tail varies greatly as to form and relative length, but it is never notched nor forked; usually it is rounded, but often it is graduated, sometimes excessively so.

The Crow-Jay family is so nearly cosmopolitan that only New Zealand and portions of Polynesia are without representatives. The group is most developed, however, in the northern hemisphere. A somewhat singular fact in connection with their distribution in the western hemisphere is that while Jays and Magpies extend from the northern limit of forests almost to the southern extremity of the temperate districts of South America, no part of tropical America being without representatives, the

Crows and Ravens reach their southern limit in the Greater Antilles and on the highlands of Honduras, no peculiar species occurring south of central Mexico or Jamaica, the Greater Antilles lacking any representation of the Jays and Magpies and the Lesser Antilles being without a single member of either group.

MAGPIE

Pica pica hudsonia (*Sabine*)

A. O. U. Number 475

Other Names.— American Magpie; Black-billed Magpie.

General Description.— Length, 19½ inches. Plumage, black with white on shoulders and abdomen. Tail, much longer than wing, graduated for ½ or more of its length; wing, short and rounded; feet, stout.

Color.— ADULTS: Head, neck, chest, upper breast, back, lesser wing-coverts, lower rump, upper and under tail-coverts, anal region, thighs, lower abdomen, and under wing-coverts, uniform black, the crown glossed with bronze, the back faintly glossed with bluish-green or bluish in certain lights; *shoulders, lower breast, upper abdomen, sides, and flanks, white*; a broad band of grayish-white across upper rump; prevailing color of middle and greater wing-coverts and secondaries metallic steel-blue, varying to bronzy-green; primaries, blackish glossed with greenish-bronze, bluish-green, or steel-bluish; the inner webs of the primaries mostly white; tail, bright metallic bronzy-green, passing into metallic-purple; iris, brown. YOUNG: Similar to adults, but black of head, neck, etc., much duller, without metallic gloss; feathers of throat usually with the basal white spots much larger, often conspicuously exposed and frequently occupying, as large wedge-shaped spots, the central portion of the feathers of chest and upper breast, as well as throat.

Nest and Eggs.— NEST: The nest proper, a bowl of mud and grass, surrounded and arched by an immense number of large and small sticks, is often the size of a barrel! Entrance, a hole on the side. They are located in bushes or trees from 5 to 60 feet up and with the bristling array of sticks pointing in all directions present a formidable appearance. EGGS: 6 to 9, usually 7, pale grayish or greenish regularly and heavily blotched with shades of brown and purple, sometimes hiding the ground color.

Distribution.— Treeless or more sparsely wooded districts of western North America, except coast and interior valleys of California; north to northwestern Alaska; south to southern Arizona, New Mexico (where breeding at 7,000 to 12,000 feet), and western Texas; east to western portion of the Great Plains, and to Lake Winnipeg; rare or casual winter visitant or straggler to southwest side of Hudson Bay, Ontario, Michigan, northeastern Illinois, Wisconsin, Minnesota, Iowa, eastern Nebraska, etc.

Drawing by R. Bruce Horsfall

MAGPIE (¼ nat. size)

A mixture of shyness and boldness

In traveling through the arid western country, one often sees a bird of slow but graceful flight, with a long tail and flashing white on wings and breast. These are the unmistakable recognition marks of the Magpie.

The nest of this bird is often conspicuous, for dense trees in which to hide a big nest such as the Magpie builds are sometimes hard to find. The Magpie has learned for his own protection to build in a thorn tree if it is available, and to roof the home over with strong twigs. The entrance is usually on the side. The nest cavity itself is built of mud and lined with fine grasses and roots. As a whole, it is quite a formidable fortress, difficult to penetrate even by a human hand.

Many complaints are lodged against the Magpie. The worst I have heard in the cattle country of the West. Where an animal sometimes has an open sore, the Magpie's taste for flesh and blood leads him to attack the wounded creature by flying down and pecking the sore. This is frequently the case where cattle are being branded.

Trappers often complain of Magpies stealing their bait and eating the smaller animals that have been trapped. Mr. Stanley Jewett, who for several years collected specimens for the Biological Survey of the Department of Agriculture, says that oftentimes when trapping for meadow mice and other small mammals, the Magpie beat him in running the line of traps. A line of traps set out through the sage brush is generally marked by bits of white cotton on the tops of the bushes. A Magpie soon becomes an expert in following these signs, and the trapper is compelled to outwit the Magpie by some other marking. WILLIAM L. FINLEY.

Down in the San Joaquin and Sacramento valleys of California dwells a cousin of the American Magpie. His name is Yellow-billed Magpie (*Pica nuttalli*). He looks very much like his relative, but is smaller, and his bill and the bare skin back of the eye are bright yellow. He is also just as noisy and has just the same mixture of shyness and boldness.

Like the other birds of this family, the Crows, Ravens, and Jays, the Magpie has a cannibalistic appetite and delights in such tidbits as other small birds, their young and eggs. He also eats crawfish and small mammals, especially mice. But his main diet is insects which include destructive black crickets, grasshoppers, grubs, and larvæ. He also likes some fruit, berries, and green leaves.

Photo by W. L. Finley and H. T. Bohlman

YOUNG MAGPIES

Bob-tailed and awkward now

BLUE JAY

Cyanocitta cristata cristata (*Linnæus*)

A. O. U. Number 477 See Color Plate 70

Other Names.— Corn Thief; Nest Robber; Blue Coat; Jay; Common Jay.

General Description.— Length, 11½ inches. Upper parts, grayish violet-blue; under parts, gray and white. Head, conspicuously crested; wings and tail, about equal in length, and rounded.

Color.— ADULTS: Crown (including crest), hind-neck, back, shoulders, rump, upper tail-coverts, and lesser and middle wing-coverts plain dull campanula-blue or grayish violet-blue; sides of the head, chin, and throat, very pale bluish-gray; a black collar beginning on nape (beneath crest) and extending thence downward across end of ear region and alongside of neck and connecting with a broader, somewhat *crescentic, patch across chest, black; greater wing-coverts, secondaries, and tail-feathers, rich cobalt or azure-blue* broadly tipped with white (except middle pair of quills), and barred with black; primaries, plain azure-blue, paler on exterior quills; breast, sides, and flanks, smoke-gray or drab-gray; abdomen, anal region, and under tail-coverts, white; iris, brown. YOUNG: Black bars usually narrower or less distinct; black markings of head and neck less distinct, crown (including short crest) bluish-gray; back, shoulders, rump, upper tail-coverts, and smaller wing-coverts, dull grayish; greater wing-coverts without black bars.

Nest and Eggs.— NEST: Located in conifers or deciduous trees, preferably the former, particularly cedars; a loose, carelessly constructed affair, with ragged rim, though some are fairly well made of sticks, leaves, bark strips, weed stems, lined with strips of bark, grass, pine-needles, rags, paper, string, or any material that seizes the bird's fancy. EGGS: 3 to 6, pale dull olive, greenish-olive, or dull buffy, spotted or blotched with dark olive-brown; one brood only.

Distribution.— Temperate eastern North America, except peninsula of Florida; north on Atlantic coast to Nova Scotia, Prince Edward Island, New Brunswick (resident), etc., in the interior to about latitude 52°, casually 56°; west to eastern Assiniboia, eastern North and South Dakota, eastern half of Nebraska, eastern two-thirds of Kansas, eastern Oklahoma and eastern half (approximately) of Texas; south to the Gulf coast.

The Blue Jay is the clown and scoffer of bird-land. Furthermore, he is one of the handsomest of American birds; also he is one of the wickedest, and therein exemplifies the literal truth of the saying "Fine feathers don't make fine birds." Many have been the attempts to write the Jay down a rascal, and not a few the efforts to rehabilitate and exculpate him. But after all has been said by his defenders, the ugly fact remains, as Mr. Job says, that the bird "has all the mis-

Drawing by R. I. Brasher

BLUE JAY (½ nat. size)

Cannibalistic, noisy, and abusive, but picturesque and popular withal

chievous, destructive, thieving traits of the Crow, and with a lot of audacity or 'cheek' thrown in for good measure."

There can be no doubt that he is a persistent and merciless nest-robber — that he eats the eggs and kills and devours the young of smaller and defenseless birds. Eloquent testimony concerning the commission of these crimes is furnished by the outcry set up by such birds, whenever they catch a Jay lurking near their nests. But we need not take the birds' word alone for it, because he has been caught red-handed by man, more than once, in the very perpetration of these villainies.

Courtesy of S. A. Lottridge

BLUE JAY

An amusing rascal

Yet even those who know and condemn the ways of Jays, are forced to admit that he is an amusing rascal. In the nesting season he is comparatively little in evidence, not only because he has his own family affairs to attend to, but because he devotes a good deal of his time to his cannibalistic practices, concerning which he is anxious to keep the rest of the feathered world in ignorance. But once his family responsibilities are discharged, and there are no more nests to be robbed, his whole demeanor changes, and he becomes the noisiest and most obstreperous creature in the woods.

"Here comes a tool with a gun; look out for him!" he yells, as you enter the woods, said Mr. Torrey; and all the rest of his brethren promptly take up the hue and cry. And let anybody who supposes that Jays can't swear, and employ the most variegated vilification and the most fluent Billingsgate, just stand by and listen to the maledictions of a flock of them as they mob their arch-enemy, the Great Horned Owl.

That the Jay has a sense of humor — which is not common among our birds — also seems very obvious. Often it is humor of the grim kind, but not always, as will be appreciated by those who have read "Baker's Blue Jay Story," in Mark Twain's *Tramp Abroad*. Here we have a most amusing yarn about how a Jay tried to fill up a deserted cabin with acorns; how he worked and swore as the nuts disappeared through the knot-hole in the roof; how one of the flock of Jays who had been attracted by his "devotions," discovered what he had been trying to do, by looking in through the open door, and promptly had a spasm; how the other Jays took a look, one by one, with the same result, and how the whole flock then sat around in the trees and guffawed over the joke — all of this is not merely amusing; it is good ornithology in so far as it reports the way a Jay acts.

James Whitcomb Riley also sketched him accurately when he said (in "Knee Deep in June")

> Mr. Blue Jay, full o' sass,
> In them base-ball clothes of his,
> Sportin' round the orchard jes'
> Like he owned the premises.

Incidentally it ought to be recorded that the Jay's kleptomaniacal and hiding propensities serve a useful purpose, for they prompt him to carry away and conceal acorns and chestnuts under leaves and in the grass and in hollow trees, with the result that when a forest of conifers is cut away, chestnuts and oaks are likely to appear from the nuts which have been hidden by these birds — and the squirrels. This service, unconscious though it be, ought not to be ignored, even as we reflect, when we remember the boisterous good nature and the clown-like ways of the Jay, that a bird, as well as a man, may "smile and smile and be a villain still."

"That a Blue Jay! Nonsense!" many people exclaim, when told that a very melodious, bell-like note coming from a thicket is one of the calls of a bird whose sole vocal accomplishment, as far as they know, is his harsh cry of *Thief, thief!* But he frequently sounds this note and

BLUE JAY *Cyanocitta cristata cristata* (Linnaeus)
$\frac{3}{4}$ nat. size

many others that are really musical, besides which he has considerable skill as a ventriloquist and as a mimic. In the latter capacity witness his frequent and almost perfect imitation of the whistled scream of the Red-shouldered Hawk, which many will insist is a deliberate attempt to terrify the other birds, and is perfectly in keeping with the Jay's love of a practical joke.

GEORGE GLADDEN.

Stomach analysis indicates that about three-fourths (76 per cent.) of the Jay's food consists of vegetable matter and that most of this is acorns, chestnuts, beechnuts, and the like. Such noxious insects as wood-boring beetles, grasshoppers, eggs of various caterpillars, and scale insects constitute about 19½ per cent. of his food. Predacious beetles contribute about 3½ per cent. This leaves but 1 per cent. for the birds and eggs, the mice, fish, salamanders, snails, and crustaceans, that make up the remainder of his diet. According to Mr. F. E. L. Beal, the Jay does not eat the seeds of poison ivy or poison sumac and the distribution of these seeds cannot be charged to him.

In the peninsula of Florida the Blue Jay is smaller and his color is paler and duller. The white tips on the wing- and tail-feathers are smaller. So here he is given the name of the Florida Blue Jay (*Cyanocitta cristata florincola*).

Photograph by Mrs. H. A. Colby

BLUE JAYS
In Maine

STELLER'S JAY

Cyanocitta stelleri stelleri (*Gmelin*)

A. O. U. Number 478

Other Names.— Mountain Jay; Pine Jay; Conifer Jay.

General Description.— Length, 12¼ inches. Fore and upper parts, sooty; rear under parts, blue. Head, conspicuously crested; wings and tail, about equal in length, and rounded.

Color.— *Head (including crest), neck, and upper portion of chest, plain black or sooty-black*, the forehead usually streaked with blue (cerulean or azure) and chin and upper throat usually streaked with pale grayish; back and shoulders, plain dark sooty-brown, rump and under parts posterior to chest, blue; the upper tail-coverts, almost cerulean-blue; wing-coverts and primaries, dull cerulean or Sèvres-blue, the greater

coverts usually with narrow bars of black; secondaries, deep cobalt or dull ultramarine-blue; tail, dull cobalt-blue, with terminal portion usually distinctly barred with black; iris, brown.

Nest and Eggs.— NEST: Usually located in firs, sometimes in other trees and bushes from 10 to 50 feet up; constructed of large sticks, moss, grass, cemented with mud and lined with fine dried grasses and hair — a bulky, substantial structure. EGGS: 3 to 5, pale bluish-green, spotted and blotched all over with olive-brown and lavender.

Distribution.—Coniferous forests of northern Pacific Coast district, from shores of Puget Sound northward to eastern shores of Cook Inlet, including Vancouver Island and other coast islands, except Prince of Wales Island and the Queen Charlotte group.

This is another handsome member of a handsome family, but, alas, like his conspicuous and noisy eastern cousin, the Blue Jay, his habits and manners serve to warn us again that "handsome is as handsome does." For his fine clothes cannot

Drawing by R. Bruce Horsfall

STELLER'S JAY (⅓ nat. size)

conceal from those who know him the fact that he is a nest-robber and a cannibal as well.

Chack-ah, Mrs. Florence Merriam Bailey says he squalls, as he flirts his tail and dashes about through the woods; and, curiously enough, like the Blue Jay, he has a sort of whistled scream which is singularly like that of the Red-shouldered Hawk. Whether, in either case, this is more than a coincidence, it is impossible to determine, though many who know how Jays act will assert their belief that the imitation is deliberate, and is intended to frighten the other birds.

The fine crest of the Steller's Jay is not always visible when the bird is flying; but, as a keen-eyed youthful friend of Mrs. Bailey remarked, "when they holler they stick that right straight up," a description which Ruskin himself couldn't have improved upon.

As happens with many of the birds, there are several slightly varying local forms of Steller's Jay in the Rocky Mountain section of the United States and Canada. These are known as the Blue-fronted Jay or Sierra Nevada Jay (*Cyanocitta stelleri frontalis*), the Long-crested Jay (*Cyanocitta stelleri diademata*), the Black-headed Jay (*Cyanocitta stelleri annectens*), the Queen Charlotte Jay or Osgood's Jay (*Cyanocitta stelleri carlottæ*) and the Coast Jay or Grinnell's Jay (*Cyanocitta stelleri carbonacea*). Two other geographical forms are found in Mexico — the Aztec Jay and the Blue-crested Jay.

These birds are more shy and retiring than the Blue Jay of the eastern States and seldom visit the orchard or the vicinity of the ranch buildings. The results of stomach examinations show but little variance from those of Blue Jays. A very considerable portion of their food consists of acorns, chestnuts, beechnuts, and the like, together with a little fruit and some insects. The insects are largely wasps and some beetles and grasshoppers. The grain consumed by the Steller's Jay and its kin is probably waste or volunteer. In the 93 stomachs available for the laboratory investigations of the Biological Survey, 13 were found to contain remains of egg-shells. This is the worst item in this Jay's record, since it indicates that the bird is guilty of eating the eggs of smaller birds; but even this is not as bad as it looks. Only 6 of these egg-eating records occurred in June, the nesting month.

FLORIDA JAY

Aphelocoma cyanea (*Vieillot*)

A. O. U. Number 479

Other Name.— Scrub Jay.

General Description.— Length, 11½ inches. Upper parts, blue and gray; under parts, gray. Head, not crested.

Color.— ADULTS: Crown, hindneck, sides of neck, shoulders, wings, upper tail-coverts, and tail, plain dull azure-blue; sides of head, duller blue; back and rump, smoke-gray or drab-gray, the latter tinged with blue; chin and upper throat, grayish-white, gradually shading into light gray on chest; feathers of lower chest, blue, forming a semi-circular collar; breast, abdomen, sides, and flanks, light smoke-gray, fading into white on anal region; under tail-coverts, dull azure-blue; iris, brown. YOUNG: Crown, hindneck, sides of neck and head, deep mouse-gray; back, shoulders, rump, and upper tail-coverts, paler and browner gray; chin, throat, and abdomen, dull whitish; under tail-coverts, light gray; rest of under parts, light grayish, deeper across lower part of chest, where forming a semi-circular collar; wings and tail as in adults, the smaller wing-coverts, however, grayish, and the greater wing-coverts narrowly tipped with pale grayish.

Nest and Eggs.— NEST: In low scrub; a compact, but flat structure of small sticks, plant stems, leaves, lined with moss, wood, or feathers. EGGS: 3 to 5, usually 4, pale bluish or greenish-white, sparsely speckled with chestnut and black, more profusely at large end.

Distribution.— Peninsula of Florida (in oak scrub, irregularly distributed).

The Florida Jay is one of the crestless Jays, and also has the peculiarity of being one of the few American birds whose range is restricted to a comparatively small area — in this instance, the peninsula of Florida. Like his cousin of the New England States, he is a noisy fellow; while his assurance often nearly equals that of the Canada Jay. His preferred habitat is scrub-oak woodland, though favorite perches are the chimney-tops of summer cottages in the sand-dunes near the ocean. From such coigns of vantage in the vicinity of Daytona, he is often found surveying the landscape and haranguing all and sundry who will give him audience.

WOODHOUSE'S JAY

Aphelocoma woodhousei (*Baird*)

A. O. U. Number 480

General Description.— Length, 11 inches. Upper parts, blue and gray; under parts, gray. Head, not crested.

Color.— ADULTS: Head and neck (except chin and throat), wings, upper tail-coverts, and tail, plain, dull azure-blue, brightest on crown where margined laterally by a narrow streak (or series of streaks) of white, the blue dullest on sides of head; *back and shoulders, deep mouse-gray,* sometimes tinged with blue; rump, more bluish-gray; chin, *throat, and chest grayish-white, streaked with bluish-gray,* these streaks broad and very distinct on chest, which is margined laterally by an extension of the blue from sides of neck; breast, sides, and flanks pale mouse-gray or smoke-gray, the abdomen paler, fading into white on anal region; under tail-coverts, light grayish-blue or china-blue; iris, brown. YOUNG: Crown, plain mouse-gray; rest of upper parts (except wings and tail), plain brownish-gray or deep drab-gray; general color of under parts, dull light brownish-gray, paler on chin, throat, chest, and abdomen, deeper and more brownish on upper portion of breast; wings and tail as in adults, but smaller wing-coverts gray and lesser coverts indistinctly tipped with the same.

Nest and Eggs.— NEST: Located in scrub oaks, bushes, thickets, or low trees, usually within 6 feet of ground; a frail structure of small sticks, lined with rootlets and horse-hair. EGGS: 3 to 6, pale bluish-green, lightly spotted all over with brown and lavender, more thickly at large end.

Distribution.— Western United States east of Sierra Nevada; north to southeastern Oregon, southern Idaho, and southern Wyoming; east to Colorado, western Nebraska, New Mexico, and northwestern Texas; south to southern Arizona and New Mexico; west to southeastern California, west to western Nevada.

Woodhouse's Jay is one of the crestless Jays of the Rocky Mountain region and in that respect resembles the perhaps even better known California Jay. It has, however, plenty of individuality, all its own, and also plenty to say, though it is probably less loquacious and withal less assertive than its eastern cousin, the Blue Jay. The common note is a strident scream which has what one observer calls a "wiry" quality that is distinctive. This is the characteristic cry of surprise or anger or alarm, but this Jay has also a variety of other notes including chuckles, gurgles, and chatters, uttered chiefly when a number of the birds are together and undisturbed. Much of this conversation sounds decidedly like that of the Blue Jays, and likely enough is about the same general topics. The language of courtship, addressed by the male to his lady-love when he has enticed her into dense foliage, is as soft and insinuating as any Dove's.

This Jay's preferred habitat is the open hillsides, or scrub-oak and other hardwood timber, which it seems everywhere to prefer to pine woods. Its food is varied, but acorns form a good part of it, and these the bird, true to the thieving propensities of his family, does not hesitate to steal from the store laid away in the bark of trees by the California Woodpeckers. The flight of the bird is steady when considerable distances are being traversed, but shorter movements among trees or in the brush are likely to be covered by combined flapping and sailing. Like most other members of their family, these Jays gather in winter in flocks, and become restless, timid, and decidedly noisy upon little or no provocation.

Pine nuts are an especially favorite item of food of Woodhouse's Jay, but his habits and general diet vary little from those of the California Jay.

Southwestern Texas boasts two species of Jays which are very similar to Woodhouse's Jay. The Blue-eared Jay or Blue-cheeked Jay (*Aphelocoma cyanotis*) has a longer wing than Woodhouse's; it is white on the posterior under parts and its back is more frequently tinged with blue, being sometimes almost a uniform blue. The other species bears the name of the State — Texas (*Aphelocoma texana*). It is similar in the coloration of its upper parts to Woodhouse's Jay (maybe a little paler and less of a blue-gray) but the white line over the eyes is more developed; the under parts are much paler, the chest being devoid of distinct blue streaks and the breast being pale grayish-brown.

CALIFORNIA JAY

Aphelocoma californica californica (*Vigors*)

A. O. U. Number 481

General Description.— Length, 12 inches. Upper parts, blue and brownish-gray; under parts, white. Head, not crested.

Color.— Adults: Entire crown, hindneck and sides of neck, uniform dull cobalt-blue; sides of head similar but darker; back, brownish mouse-gray; shoulders and rump, more bluish-gray, wings, tail, and upper tail-coverts, rather dull azure-blue; chin, throat, and center portion of chest, white, the last streaked with blue; sides of chest, uniform blue; breast, very pale drab-gray fading into dull white on other under parts; the anal region and shorter under tail-coverts pure white; iris, brown. Young: Crown, hindneck, and sides of head, sides of chest, rump, and upper tail-coverts, uniform mouse-gray, the crown slightly more bluish-gray; back, shoulders and lesser wing-coverts, deep drab-gray, a broad space behind ear and eye narrowly streaked with dusky gray; anterior portion of cheek region, chin, throat, center portion of chest, and under parts, white.

Nest and Eggs.— Nest: Placed in low bushes, scrub oaks, dense chaparral, usually low, sometimes in trees 30 feet up; a bulky structure, exteriorly made of interwoven twigs, grass, and moss, containing an inner lining of fine rootlets and horse-hair. Eggs: 3 to 6, usually 4, dark green or buffy of varying shades, thickly spotted and blotched with burnt umber, chestnut, sepia, or lavender.

Distribution.— Pacific coast district of United States (north of San Fernando, San Gabriel, and San Bernardino mountains), north to southwestern Washington, east to, and including, eastern slope of Sierra Nevada and Cascade ranges.

The Jays are one branch of the *Corvidæ* or Crow family, but, in contrast to the Crows, the Jays are of bright and varied colors, generally blue, and often the head is crested. The Jay is a well-known character everywhere, but has a shady reputation.

The California Jay is very different from the deep blue, long-crested Steller Jay, but resembles

more the Blue Jay of the East. The general color pattern of the dress is somewhat the same, but it lacks the crest.

A small flock of Jays are a noisy pack in the autumn. They squawk through the woods as if they want everybody to know just where they are, but in the spring after they have paired and are nesting they suddenly go speechless, as if they can't trust themselves to talk out loud. And indeed, they can't when anywhere about the nest. They talk in whispers and flit as silently as shadows through the trees.

While it is so often reported that the Jay goes through the woods stealing eggs and wrecking the homes of other birds, yet I have often questioned whether there are not some good Jays that should not be called thieves. Perhaps there are robber barons among birds, as among men.

In one case where we had a good chance to study the home life of a pair of California Jays, I could find no evidence of their nest robbing. If they robbed other birds, they did it on the quiet some distance from their own home, for in their thicket not many yards away, I found a Robin's nest with eggs and the nest of a Thrush with young birds. The Jays evidently wanted to stand well with their neighbors and live in peace. WILLIAM L. FINLEY.

In southern California two local forms of this Jay are found. Belding's Jay (*Aphelocoma californica obscura*) is smaller and darker than the type species. Its back is a deep brownish mouse-gray with the blue parts a deeper hue; the under parts are decidedly gray in the front, only the lower abdomen and anal region being distinctly white. Xantus's Jay (*Aphelocoma californica hypoleuca*) is smaller, also, but it is much paler; the blue portions of its plumage are a lighter and clearer azure and the under parts are usually whiter or not so much tinged with brownish-gray.

The Island of Santa Cruz, California, has a species all to itself. The Santa Cruz Jay (*Aphelocoma insularis*) is like the Belding's Jay in color but is larger even than the California Jay.

Though Mr. Finley gives the California Jay a good character, others say it excels its eastern cousin, the Blue Jay in its bad habits of nest-robbing, and that besides robbing the nests of other wild birds it will even rob hen's nests of their eggs. A woman who lived at the mouth of a small ravine told Mr. F. E. L. Beal of the United States Biological Survey that one of her hens had a nest under a clump of bushes. Every day a Jay came to a tree a few rods away. When it heard the cackle of the hen announcing a new egg, it flew at once to the nest. At the same time the woman hastened to the spot but in most cases the Jay reached there first. This Jay will also attack a young chick and with a few blows of the beak kill it; he then pecks open the skull and eats the brains. Another sin of the California

Photo by W. L. Finley and H. T. Bohlman

YOUNG CALIFORNIA JAY AT NEST

Jay is fruit-stealing. Cherries, apricots, and prunes are the favorites. Analysis showed that while the fruit eaten was only 16 per cent. of the food for the year, it was 44 per cent. of the food in June, 33 in July, 53 in August, and 25 in September. Five per cent. of the food for the year consists of grasshoppers; 4 per cent. wasps and bees; 23 per cent. beetles, bugs, flies, and caterpillars; 6 per cent. grain, of which the major part was oats; and about 42 per cent. acorns, chestnuts, beechnuts, and the like, eaten from September to March, inclusive.

ARIZONA JAY

Aphelocoma sieberi arizonæ (*Ridgway*)

A. O. U. Number 482

General Description.— Length, 12½ inches. Head and tail, blue; body, gray. Wings, longer than tail; head, not crested.

Color.—Above, including sides of head and neck, light dull cerulean-blue; back and shoulders, usually distinctly gray (deep ash-gray to bluish-gray, rarely grayish-blue); chin and upper throat, very pale dull bluish-gray or grayish-white, this grayish-white deepening gradually into smoke-gray on chest, breast, and sides, and this fading into paler gray on flanks and abdomen; the lower portion of the abdomen, the anal region, and under tail-coverts, white.

Nest and Eggs.— Nest: Located in oaks from 12 to 30 feet up; a flat saucer-shaped, flimsy structure, of small sticks and twigs, evenly laid in circles, supporting a woven interior of rootlets, usually unlined otherwise. Eggs: 3 to 7, plain robin-blue.

Distribution.— Southern Arizona, southwestern New Mexico, and northern parts of Sonora and Chihuahua.

"Noisy, fussy, and quarrelsome as all Jays are, I know of no other species which possesses to such an eminent degree the quality of prying into all manner of things which do not concern it, and of making such a nuisance of itself in general, on the slightest provocation or on none at all, as the Arizona Jay does," is the amiable and inviting character given this bird by a western observer, Harry S. Swarth. Like the eastern Jay, this species takes particular delight in badgering a Hawk of any kind. Such a bird, whether it happens to be a Cooper, which is a real and dangerous enemy of all small birds, or a Red-tailed or a Red-shouldered, which are comparatively harmless in the feathered world, a flock of these Jays will follow a long way (if their victim be moving by short flights through the woods), staying at a safe distance, but keeping up an incessant chorus of abuse, threats, and imprecations.

A fox discovered sunning himself on a bowlder or a log, is cordially mobbed as long as the Jays can keep him in sight, and they will follow and curse even a rattlesnake, often lighting near it on the ground and strutting in a ludicrous manner, with the head and body held stiffly upright and about a third of the tail dragging.

This Jay seems to be naturally a very timid bird, but its curiosity is usually greater than its caution, for it may often be attracted to close quarters by a hissing or squeaking noise, if the cause of it remains hidden. Another peculiarity which will often aid in identifying the bird, even when it is not seen, is the singular fluttering sound made by its wings when it is in flight.

The bulk of the food taken by the Arizona Jay is acorns, but wild fruit and seeds, grasshoppers and other insects are also consumed in fair amounts.

GREEN JAY

Xanthoura luxuosa glaucescens (*Ridgway*)

A. O. U. Number 483

Other Name.— Rio Grande Green Jay.

General Description.— Length, 11 inches. Upper parts, blue-green; under parts, pale green. Wing, short and rounded; head, not crested.

Color.— Nasal tufts, broad cheek patch (extending up to and involving posterior half of lower eyelid), crown, back of head, and hindneck, blue; forehead white, or yellowish white; chin, throat, chest, ear region, black; back, shoulders, rump, upper tail-coverts and wings plain yellowish-green or sage-green, usually glossed (often extensively) with blue; the wings rump, and upper tail-coverts, rather lighter or brighter than back; four middle tail-feathers duller or darker green, becoming more bluish-green terminally; four lateral tail-feathers pale yellow; under parts, posterior to chest, including under tail-coverts, pale green often

glossed with pale blue; the lower portion of the abdomen and anal region pale yellow.

Nest and Eggs.—NEST: Well hidden in dense thickets; constructed of thorny twigs, and thinly lined with grass, moss, rootlets, and hair. EGGS: 4 to 7, grayish, greenish or buffy white, spotted with brown and lavender thickly around large end.

Distribution.—Lower Rio Grande valley, in southern Texas and northern Tamaulipas and Nuevo Leon, from the coast as far up the valley as Laredo, Texas.

This handsome Jay occurs chiefly in southeastern Texas, and is essentially a bird of Mexico rather than of the United States. It reveals many of the characteristics of its family, including inquisitiveness and pugnacity, and that it has a strong liking for flesh is shown by its practice of lurking near houses and feeding on refuse containing meat. It seems probable, therefore, that it may have the nest-robbing habits which characterize some of its relatives.

CANADA JAY

Perisoreus canadensis canadensis (*Linnæus*)

A. O. U. Number 484 See Color Plate 71

Other Names.—Whiskey Jack; Camp Robber; Whiskey John; Moose-bird; Meat Hawk; Carrion Bird; Grease Bird; Meat Bird; Venison Bird.

General Description.—Length, 11½ inches. Plumage, gray, dark above and light below. Wing, short and rounded; head, not crested.

Color.—ADULT: *Forehead* (including nasal tufts), fore part of *crown*, sides of head, chin, throat, and chest, *white; back, shoulders, lesser wing-coverts, rump, and upper tail-coverts, plain mouse-gray;* wings and tail slate-gray, the primaries slightly more bluish; middle and greater wing-coverts sometimes tipped with white; under parts of body, plain drab-gray, paler (almost, sometimes quite, white) on anal region and under tail-coverts; iris, brown. YOUNG: Above, including crown and hindneck, slate color or brownish-slate; under parts, including chin, throat, and chest, plain brownish slate-gray.

Nest and Eggs.—NEST: Placed in a conifer alongside the trunk; a bulky, high-walled structure of twigs, pine-needles, bark-strips, grasses, and, as the eggs are laid in March or April when the mercury frequently registers 30° below zero, very warmly lined with feathers and down. EGGS: 3 to 5, pearl-gray, heavily speckled with brown and lavender.

Distribution.—From northern limit of coniferous forests south to Nova Scotia, New Brunswick, northern Maine, higher mountains of New Hampshire, Vermont, and northern New York (Adirondacks), northern Ontario, northern Michigan, and northern Minnesota—irregularly, casually, or during winter to Massachusetts, vicinity of New York City, Pennsylvania, southern Ontario, southern Michigan, southeastern Wisconsin, and South Dakota; west to Alberta; north to lower Anderson and Mackenzie rivers, and west side of Hudson Bay.

Drawing by R. I. Brasher

CANADA JAY (⅓ nat. size)

"Whiskey Jack" always looks and acts fuddled, especially when he is planning to steal something

To those who know his habits, "Whiskey Jack" seems about as undesirable a citizen of bird-land as his noisy American cousin, the Blue Jay. Which is to say, he is a nest-robber, and in this rôle is immensely unpopular with his feathered kind, as well as with their human friends. In appearance, however, he bears little resemblance to the American dandy, for there are only black, white, and gray, no bright blue, in his plumage, which furthermore presents an unkempt appearance, so that withal "Jack" looks a good deal like an exaggerated and much dishevelled Chicadee. Also "Jack" has a distinctly uncanny air about him as he sits on a branch and regards you vacantly with his beady, black eyes, or flits noiselessly around your camp. But don't make the mistake of supposing that he is really preoccupied or absent-minded, much less timid, for actually he is about the cheekiest thing that wears feathers. All the time, probably, he has his eye on the bacon or the potatoes, which he will not hesitate to steal from under your very nose if he sees the opportunity. Hence his well-deserved name, "Camp Robber." But the man who doesn't enjoy being robbed by such a thief, had better stay at home and sit in the parlor.

As a vocalist, "Jack" is considerably more versatile, though no more musical, than the Blue Jay. When he feels so disposed, he can produce an astonishing medley of "chucks," whistles, squalls, squawks, and screams. He doesn't seem to swear as much as the Blue Jay does, but he has been known to provoke profanity from more than one still-hunter, whose presence and purpose he is particularly fond of announcing and then ridiculing for the information and amusement of all the woods-folk within a radius of half a mile.

GEORGE GLADDEN.

There are three variant forms of the Canada Jay. In the West, in the Rocky Mountain region, from central British Columbia, southern Alberta, and southwestern South Dakota south to Arizona and Nebraska, is the White-headed or Rocky Mountain Jay (*Perisoreus canadensis capitalis*). He is larger and lighter colored than the Canada Jay; the whole of his head is white, except the space just around and behind the eyes, which, together with the hindneck, is slate-grayish. In the wooded parts of Alaska and the adjacent part of Canada we find the Alaska Jay (*Perisoreus canadensis fumifrons*). He is a Canada Jay who has put on a dusky hood over his crown leaving only his forehead white. The third variety is found in the eastern part of British America and is named the Labrador Jay (*Perisoreus canadensis nigricapillus*). He is smaller

Courtesy of *Field and Stream*

CANADA JAY

He is about the cheekiest thing that wears feathers

Photo by H. E. Anthony

OREGON JAY

than the head of his family and decidedly darker in coloration.

The Oregon Jay (*Perisoreus obscurus obscurus* and his variant form, the Gray Jay (*Perisoreus obscurus griseus*), look like Canada Jays, with the wrong color of plumage. The Oregon Jay has brown upper parts and dull white under parts and the Gray Jay has deep mouse-gray upper parts and grayish-white under parts. The Oregon Jay lives in the Pacific coast district from southwestern British Columbia to northern California. The Gray Jay is found in the interior districts of northern California north through central Oregon and Washington to British Columbia. Both are familiarly known as "Camp Robbers."

RAVEN

Corvus corax sinuatus *Wagler*

A. O. U. Number 486 See Color Plate 71

Other Name.— Mexican Raven.

General Description.— Length, 26½ inches. Plumage, black. Wing, long and pointed; tail, much shorter than wing; bill, compressed, and higher than broad; feet, stout.

Color.— Entire plumage, deep glossy black; the wing-coverts, secondaries, innermost primaries and tail, glossed with violet; primary-coverts and longer and outermost primaries, glossed with bluish or greenish; under parts glossed with blue or greenish-blue; iris, deep brown.

Nest and Eggs.— NEST: Located almost invariably on a ledge of inaccessible cliffs; constructed of large sticks well interlaced, the interior well lined with coarse grass, bark strips, wool, and, in maritime sites, with seaweed; the birds are strongly attached to the site, returning year after year. EGGS: 5 to 7, green, olive, drab, profusely spotted and blotched with browns, olive, and lavender.

Distribution.— Oregon, Montana, and South Dakota, south to Honduras and east probably to Missouri, Illinois, and Indiana.

At a distance the Raven looks much like a large Crow, but a closer inspection will reveal certain marked differences. It is decidedly a larger bird and its deep, harsh notes once heard can never be mistaken for the *caw* of the Crow. Ravens breed much in the deep forests of the northwest. On the sagebrush deserts of eastern Oregon their nests are placed among the cliffs of the "rim rocks." Though not distinctly gregarious, in the breeding season certain favorite

Drawing by R. I. Brasher

RAVEN (⅛ nat. size)

A larger brother to the Crow

localities are often used by from two to half a dozen pairs, and the same birds will resort to these places for many years. In the desert regions they eat dead jack rabbits and such other flesh, either fresh or putrid, as may be discovered.

One may see Ravens any summer about the garbage piles back of some of the hotels in the Yellowstone and Glacier national parks. Here they come to share with the bears the refuse from the hotel kitchens. They possess an astonishing variety of coarse cries, grunts, and screams which one may enjoy if in the neighborhood of a pair that are attending to the wants of their offspring. The Raven is found generally throughout Canada and the States of the Northwest.

A closely allied species is the Northern Raven *Corvus corax principalis* which also inhabits Canada but comes down into eastern United States, breeding as far south as the southern Alleghenies. In the North Carolina mountains they are common residents in some sections. Here they come regularly to rural slaughter pens in quest of food. Among the evergreen-covered islands off the coast of Maine I have found several of their nests. These are all built in trees and never more than one pair of Ravens breed on any one island. Farther north in Newfoundland and along the Labrador coast they seem to prefer cliffs overlooking the sea as places in which to establish their eyries.

T. Gilbert Pearson.

Probably the food of the Raven is almost as varied as that of the Crow, yet it is not known to attack cultivated crops of any kind, and the belief that it is destructive to young birds, eggs, and game is rather an inference than the result of observation. Its scarcity precludes the possibility of its doing serious injury of this kind anywhere. There is a strong possibility that it frequents the nesting places of the Gulls and Terns and does some mischief by robbing nests.

WHITE-NECKED RAVEN

Corvus cryptoleucus *Couch*

A. O. U. Number 487

General Description.— Length, 20 inches. Prevailing color, black. Wing, long and pointed; tail, much shorter than wing; bill, compressed, higher than broad; feet, stout.

Color.— Plumage, glossy black, the upper parts (except hindneck) with a violet sheen, the under parts faintly glossed with bluish; *feathers of neck, lower throat, chest, and breast with basal half or more (concealed) pure white;* iris, brown.

Nest and Eggs.—Nest: Located in trees or bushes, usually at no great height from the ground: constructed of sticks, twigs, and grass. Eggs: 4 to 7, pale bluish-green spotted with brown and profusely streaked with zig-zag lines of olive-gray.

Distribution.— Great Plains, from southeastern Wyoming and western Nebraska, southward to central Mexico; westward through New Mexico and Arizona to coast of southern California.

This is a bird of the hot southwestern deserts and valleys where it is commonly called a "Crow," presumably because some of its habits are Crow-like. Certainly it bears little outward resemblance to the almost universally known bird of that name, though it is indeed a member of the same great family.

Where these interesting birds have not been molested, they are usually quite tame and friendly. Under these conditions they pay little heed to the approach of a wagon or a man on horseback; and they often come about the schoolhouses to pick up the remains of the children's luncheons; but after being shot at they become very timid and suspicious. Even in this mood, however, they are often easily attracted within shot by almost any kind of decoy which will appeal to their characteristic Crow curiosity. One collector got all the specimens he needed by tossing into the air a red bandana handkerchief tied around a stone, the result being that he was almost mobbed by the Ravens though he was standing in plain sight.

In winter these Ravens show another family characteristic by gathering into flocks; and they are often seen in groups on the mesas, even

Courtesy of the New York State Museum

NORTHERN RAVEN
Corvus corax principalis Ridgway

Both ¼ nat. size

CANADA JAY
Perisoreus canadensis canadensis (Linnaeus)

during the breeding period. Again, during the cold weather, they often gather about stockyards to feed, and even invade the cities where they do much valuable work as scavengers. Here the bird's natural intelligence is shown by the fact that it soon becomes tame to the point of boldness, which is plain evidence that it is quick to realize that in these surroundings it will not be molested by the very creatures whom it quickly learns to fear in its natural habitat.

The White-necked Raven feeds principally on animal matter, including locusts. Refuse grain also plays an important part in its diet. Its nest resembles that of the common Crow.

CROW

Corvus brachyrhynchos brachyrhynchos *Brehm*

A. O. U. Number 488 See Color Plate 72

Other Names.— American Crow; Common Crow; Carrion Crow.

General Description.— Length, 19¾ inches. Plumage, black. Wing, long and pointed; tail, much shorter than wing; bill, compressed, and higher than broad; feet, stout.

Color.— ADULTS: Entire plumage, deep black; the back, shoulders, rump, upper tail-coverts, wing-coverts, and secondaries, with a gloss of metallic-violet; the primary coverts, primaries, and outermost tail-feathers glossed with greenish-blue; the middle tail-feathers glossed with duller or more bluish-violet than the back, etc.; under parts slightly glossed with bluish-violet; iris, brown. IMMATURE (IN FIRST WINTER): Similar to adults, but the violet and bluish-green gloss of upper parts less distinct, especially on wings and tail; under parts, duller black. YOUNG: Head, neck, and body, dull sooty or grayish-black, the black slightly glossed with violet; wings and tail as in adults, but less strongly glossed with violet.

Nest and Eggs.— NEST: Usually at good height in conifers or other trees, sometimes 75 feet from ground; a well-made, but coarse, structure of sticks, twigs, grasses, tree bark, very often thickly and evenly lined with the soft inner bark of chestnut, basswood, or other dead trees, giving the interior a warm, yellowish-brown color; fine roots, straw, wool, or hair are also used for linings. EGGS: 4 to 8, from pale bluish-green to olive-green or greenish-buff, irregularly spotted and blotched with brown and olive-gray.

Distribution.— Temperate eastern North America, except peninsula of Florida; north on Atlantic coast to Newfoundland and Magdalen Islands (southern Labrador?), on west side of Hudson Bay to Nelson River, and in the interior nearly to the Arctic coast; west to the beginning of the arid region.

Courtesy of Am. Mus. Nat. Hist.

CROW (½ nat. size)

One of the best known of American birds

Probably a very large percentage of Americans would vote for the Crow, in any contest intended to decide which is the best known bird in America. And probably a large percentage of the persons so voting would mistake a Fish Crow for a Common Crow. For if any such should be observing enough to notice the difference in size between the two birds, he would be likely to account for that disparity by concluding that the Fish Crow was a "small" Crow. However, it is apparent that the Crow is one of the best known of our birds. And to the average farmer, he is likely to be one of the least favorably known.

Photo by Rollin F. Cass Courtesy of Outing Pub. Co.

YOUNG CROWS

The Crow unquestionably is a remarkably clever bird. This is clearly demonstrated in many ways by his conduct in his natural state, and has been borne out in the cases of many hundreds of tamed Crows, who have furnished endless amusement for their owners. Apparently such birds always display a thieving propensity, amounting to what would be considered kleptomania in human beings. They seem to have an especial passion for stealing and hiding any object of a bright color, like a spool of red or blue thread; or any highly polished metal article, like scissors or thimbles. It is an interesting fact that other members of the same family (notably the Magpies and the Jays) evince plainly the same characteristic.

Farmers who try to keep the Crows away from their newly planted corn see plenty of proof of their astuteness. It seems clear that such marauders are sometimes guarded by a sentinel, who gives ample warning of the approach of danger. Other birds, as well as various mammals (for example, the American and certain African antelopes), apparently take similar precautions; but always such an act, if it is intentional, must denote a very high degree of intelligence. Yet we must beware of stultifying ourselves as observers of animal life of any kind, by recording "observations" like the following, which Mr. Burroughs quotes:

"A man sees a flock of Crows in a tree in a state of commotion; now they all caw, then only one master voice is heard; presently two or three Crows fall upon one of their number and fell him to the ground. The spectator examines the victim and finds him dead, with his eyes pecked out. He interprets what he has seen as a court of justice; the Crows were trying a criminal, and having found him guilty, they proceed to execute him. The curious instinct which often prompts animals to fall upon and destroy a member of the flock that is sick or hurt, or blind, is difficult of explanation, but we may be quite sure that, whatever the reason is, the act is not the outcome of a judicial proceeding in which judge, jury, and executioner all play their proper part."

Portia probably wasn't aware, when she said to Nerissa

> The Crow doth sing as sweetly as the lark
> When neither is attended,

that she was stating — with some exaggeration, of course — a fact in American ornithology. Indeed, probably few Americans know that the Crow can sing at all. Yet it is a fact that the bird has a musical little warble which he utters when he thinks he is not "attended."

In a dense forest in Michigan, an observer managed to skulk through the underbrush to within about twenty-five yards of the base of a group of tall spruce trees, in the topmost branches of which a little party of Crows warbled at intervals of a minute or two, for ten or fifteen minutes. That more than one singer was involved seemed certain, but the listener could not determine how many, because the Crows were only dimly discernible through the thick foliage. But it was evident that this was the Crow's "song"; and that the birds did not know they were "attended" was made apparent by the tremendous outcry of protest and abuse which they raised when one of them discovered the audience.

Of the Crow's characteristic note, we have a poetic and eloquent appreciation from James Russell Lowell, when he says: "Yet there are few things more melodious than his caw of a clear winter morning as it drops to you filtered through five hundred fathoms of crisp blue air."

GEORGE GLADDEN.

The Crow is commonly regarded as a blackleg and a thief. Without the dash and brilliancy of the Jay, or the bold savagery of the Hawk, he is accused of doing more mischief than either. That he does pull up sprouting corn, destroy chickens, and rob the nests of small birds has been repeatedly proved. Nor are these all of his sins. He is known to eat frogs, toads, salamanders, and some small snakes, all harmless creatures that do some good by eating insects. With so many charges against him, it may be well to show why he should not be utterly condemned.

The examination of a large number of stomachs shows that the nest-robbing habit, as in the case of the Jay, is not so universal as has been supposed. Neither are many toads and frogs eaten. As frogs are of no practical value, their destruction is not a serious matter; but toads are very useful, and their consumption, so far as it goes, must be counted against the crow. Turtles, crawfishes, and snails, of which he eats quite a large number, may be considered neutral, while mice may be counted to his credit.

In his insect food, however, the Crow makes amends for sins in the rest of his dietary, although even here the first item is against him. Predacious beetles are eaten in some numbers throughout the season, but the number is not great. May beetles, June bugs, and others of the same family constitute the principal food during spring and early summer, and are fed to the young in immense quantities. Other beetles, nearly all of a noxious character, are eaten to a considerable extent. The Crow is no exception to the general rule that most birds subsist, to a large extent, upon grasshoppers in the month of August. Many bugs, some caterpillars, mostly cutworms, and some spiders are also eaten — all of them either harmful or neutral. Probably the most important item in the vegetable food of the Crow is corn. By pulling up the newly sprouted seeds, the bird renders himself extremely obnoxious. Observation and experiments with tame Crows show that hard, dry corn is never eaten if anything else is to be had, and that if fed to nestlings it is soon disgorged. The reason Crows resort to newly planted fields is that the kernels of corn are softened by the moisture of the earth, and probably become more palatable in the process of germination, which changes the starch of the grain to sugar. Crows eat corn extensively only when it has been softened by germination or partial decay, or before it is ripe and still "in the milk." Experience has shown that they may be prevented from pulling up young corn by tarring the seed, which not only saves the corn but forces them to turn their attention to insects. If they persist in eating green corn it is not so easy to prevent the damage.

Crows eat fruit to some extent, but confine themselves for the most part to wild species, such as dogwood, sour gum, and seeds of the different kinds of sumac. They have also a habit of sampling almost everything which appears eatable, especially when food is scarce.

In estimating the usefulness of the Crow, the bird should receive much credit for the insects which it destroys. In the more thickly settled parts of the country it probably does more good than harm, at least when ordinary precautions

Courtesy of Outing Pub. Co.

YOUNG CROWS IN NEST

Five red flannel mouths stretched agape

are taken to protect young poultry and newly planted corn against its depredations.

F. E. L. Beal.

Two smaller forms of the Common Crow are found in North America. The Florida Crow (*Corvus brachyrhynchos pascuus*) is confined to the peninsula of Florida. The Western Crow (*Corvus brachyrhynchos hesperis*) ranges through western North American from east-central British Columbia and Montana south to southern California, Arizona, and western Texas.

The Northwestern Crow (*Crow caurinus*) is found all along the northwest coast of North America from northwestern Washington to the Alaskan peninsula. It is even smaller than the Florida and Western Crows, but it so much like them that Ridgway considered it only another form of the Common Crow.

FISH CROW

Corvus ossifragus *Wilson*

A. O. U. Number 490 See Color Plate 72

General Description.— Length, 13¾ inches. Plumage, black. Wings, long and pointed; tail, much shorter than wing; bill compressed, and higher than broad; feet, stout.

Color.— Entire plumage, glossy black; the upper parts, glossed with bluish-violet (more purplish-violet on lesser wing-coverts and secondaries), the under parts, glossed with bluish-green or greenish-blue; iris, brown.

Nest and Eggs.— NEST: In maritime cedars, about 20 feet up; a platform of sticks with sides of bark, twigs, and grasses, lined with grapevine or other bark, grass, and a few leaves. EGGS: 4 to 6, smaller than, but otherwise exactly similar to, those of the Common Crow.

Distribution.— Atlantic and Gulf coast districts of United States, including peninsula of Florida; north to lower Hudson valley and shores of Long Island Sound (breeding in eastern Connecticut near Rhode Island border), casually to Massachusetts; west along the Gulf coast to Louisiana; not restricted to the immediate coast, but extending back to base of Blue Ridge Mountains (at least in summer), and abundant about lakes and streams in interior of Florida.

The Fish Crow is far more common along the coast and about rivers and lakes than in the fields and wooded uplands. It feeds largely on such forms of animal life as die and float ashore. It is also a great egg-eater. In the south the Heron and Ibis rookeries are constantly robbed by them. As an example of their destructiveness to birds' eggs, there may be mentioned the colony of twenty pairs of Little Blue Herons on Big Lake, North Carolina, from which every egg was taken by Fish Crows while a company of naturalists were photographing in the neighborhood. The Herons left their nests upon the approach of the men but the Fish Crows came boldly upon the scene and inside of an hour had completely plundered every nest.

This bird may be distinguished from the Common Crow by its smaller size and by the richer color of its black plumage. Those who know Crows well can easily tell them apart by their notes. The common variety has a loud clear *caw,* while the Fish Crow possesses a voice with a cracked and high-pitched nasal quality. They are found in eastern United States chiefly along the Atlantic seaboard, or in the Hudson River valley, and in the neighborhood of the Gulf of Mexico. The nest is very compactly built, and in Florida often contains much "Spanish moss." It is placed in tall trees, and in the south pine trees are almost exclusively selected for the purpose.

T. GILBERT PEARSON.

The Fish Crow, flying above a school of fish, will suddenly dash down from a considerable height and unerringly seize its prey. Small fish are immediately swallowed, but larger ones are carried to a tree or some other convenient place and torn to pieces. This bird treads for clams just as human beings do, and then dislodges them with its beak, breaks the shell by the same means, and tears out the clams with the aid of its claws. The stomach contents of a number of specimens which were examined showed traces of insects (mostly grasshoppers), carrion, grain, and berries.

Photo by H. K. Job Courtesy of Houghton Mifflin Co.

FISH CROW

Over Florida rookery, bent on nest-robbing

Courtesy of the New York State Museum

FISH CROW
Corvus ossifragus Wilson

All ¼ nat. size

CROW
Corvus brachyrhynchos brachyrhynchos Brehm

CLARKE'S NUTCRACKER

Nucifraga columbiana (*Wilson*)

A. O. U. Number 491

Other Names.— Clarke's Crow; Meat Bird; Camp Robber.

General Description.— Length, 12½ inches. Body, gray; wings, black. Wings, long and pointed, and, when folded, reaching to the end of tail; tail, a little over one-half length of wing; bill, cylindrical.

Color.— Nasal tufts, front portion of forehead, eyelids, forward portion of cheek region, and chin, white, usually soiled or tinged with dirty yellowish; rest of head, neck, back, shoulders, and under parts (except chin and under tail-coverts), plain smoke-gray or drab-gray, the head somewhat paler than other portions; rump, darker gray than back, deepening into grayish-black on upper tail-coverts; under tail-coverts, pure white; wings and two middle tail-feathers, black, glossed with purplish-blue or violet, especially on wing-coverts and secondaries, the latter very broadly tipped with white; four outermost pairs of tail-feathers white, the fifth pair with outer web mostly white and inner web mostly black; iris, brown.

Nest and Eggs.—NEST: Usually in pines on horizontal branches from 8 to 40 feet up; a large bulky affair; the base of coarse sticks, twigs of white sage, on which is built the true nest of dried grasses, plant-fiber, moss and fine strips of juniper bark, all deftly interwoven into a snug home. EGGS: 3 to 5, finely and minutely specked with brown and pale purple, uniformly marked or wreathed at large end.

Distribution.— Coniferous forests of western North America, from high mountains of New Mexico, Arizona; and northern Lower California to northwestern Alaska; casual in southeastern South Dakota, Nebraska, western Kansas, western Missouri, and Arkansas.

The Clarke Crow or Nutcracker was first discovered by Captain William Clarke near the site of Salmon City in Idaho, August 22, 1805. While this bird is a Crow in actions, yet in dress he is very different. One might think Mother Nature had made him by using an ordinary Crow. She whitened his whole body, but did not finish with his wings and tail; these she left black except with a white patch on the lower part of the wings and the outer feathers of the tail. She made a striking character, typical of the high western mountainous country where the Alpine hemlocks and the jack pines live.

Whenever at Cloud Cap Inn, the log-house hotel which is fastened down with cables on the north slope of Mt. Hood, I like to spend all the

Drawing by R. I. Brasher

CLARKE'S NUTCRACKER (⅛ nat. size)

A conspicuous, noisy, good-natured mountaineer, who keeps you well informed as to his whereabouts and his opinions

time watching the Clarke Crows and Oregon Jays. These birds have learned to come about the hotel for their daily meals all during the summer, and, from the interest that people take in these birds and the squirrels, I sometimes think they are almost as big an attraction as the very mountain itself, for most people do really have a love for outdoor creatures that have changed their normal habits and have become so tame

Photo by W. L. Beatty Courtesy of *Field and Stream*

CLARKE'S NUTCRACKERS

Near Butte, Montana, at an altitude of 7,000 feet

through protection that they will eat from the hand. The scraps from the table are thrown over the cliff down below the Inn on the west side. Here is the best place to study Crows and Jays.

The Clarke Crow is very fond of meat, and for this reason he has often been called "meat bird." His taste for suet or for peanuts often leads the bird to become quite bold and even to take food from the hand. The Oregon Jays are even bolder than the Crows. They are both commonly known as "camp robbers."

In a recent trip through Yellowstone Park, I was surprised to find the Clarke Crow so much wilder than the Rocky Mountain Jay. On account of the protection they receive, many of the wild birds and animals have become so tame that they feed from the hand. While we fed the Jays in many places, I never saw a single Crow come down near the hotel. However, they perhaps do this at different times and places. It may have been that natural food was so abundant in the forests they did not care for the offerings of civilization. All during our trip, we saw them launching out from tree-tops, sometimes with a long swoop, opening their wings and letting themselves curve up before the next drop. Their continuous, harsh, rattling call that sounds like *Char-r! Char-r!* is a familiar and typical sound of the pine timber and rugged mountains. WILLIAM L. FINLEY.

The winter food of the Nutcracker is the seeds of conifers. These he obtains by landing on a branch bearing a cluster of cones; almost before he has gained his balance, he starts off again with an upward flip of his tail and a cone loosened by his foot rattles to the ground. The cone he then picks up in his bill and carries it to some place where he can knock off the scales and get at the seeds. In the spring, summer, and fall he feeds on berries, the seeds of the sundial (lupine), larvæ, butterflies, black crickets, beetles, and grasshoppers. Hulled pine seeds are fed to the nestlings.

PIÑON JAY

Cyanocephalus cyanocephalus (*Maximilian*)

A. O. U. Number 492

Other Names.— Blue Crow; Piñonero.

General Description.— Length, 11½ inches. Plumage, grayish-blue. Tail, almost square; much shorter than wing; head, not crested; bill cylindrical.

Color.— ADULT MALE: General color, uniform dull grayish-blue, paler on posterior under parts, deepening on crown, hindneck, and ear region into a much darker and more purplish-blue, the sides of the head, brighter blue (almost azure-blue); chin, throat, and center portion of chest, broadly streaked with grayish-white; anal region, very pale bluish-gray or grayish-white; iris, brown. ADULT FEMALE: Similar to the adult male, but averaging decidedly smaller and usually much duller in color. YOUNG: No blue on body.

Nest and Eggs.— NEST: Located usually in piñon pines or junipers, from 5 to 12 feet up; a large, bulky, but compact structure, made of sagebrush twigs, weeds, grass, and stems, lined with gray fibrous bark, which is broken by the movements of the bird on the nest into small fibers, forming a felt-like lining. EGGS: 3 to 5, bluish-white, thickly and evenly spotted over whole surface.

Distribution.— Piñon and juniper woods of western United States; north to southern British Columbia, Idaho, etc., south to northern Lower California, Arizona, New Mexico, and western Texas, east to eastern side of Rocky Mountains in winter to Nebraska, casually to eastern Kansas.

The Piñon Jay is a loosely clothed, fluffy bird that combines the form of a Crow with the color and habits of a Jay. It is a very sociable bird. One may often see large flocks of them in the pine timber of southern Oregon and out through the juniper and sagebrush country. They move along very much as Blackbirds do at times, going from tree to tree, or, if feeding along the ground, the rear birds will rise, flying along over the flock and lighting again in front of the main body. The bird perhaps belongs more to the nut-pine country further south. While nuts are a large part of their food, they are very fond of juniper berries and perhaps in search of a change of diet, they flock hither and thither over a large range.

The social nature of the Piñon Jay extends even through the breeding season, for often where one nest is found, others are found near in a sort of a colony. The first naturalist who found the nest and saw the young of the Piñon Jay was Mr. Robert Ridgway. He saw a colony of these birds nesting in the low range of piñon-covered hills in the vicinity of Carson City, Nevada, on April 21, 1868.

In his life history of the Piñon Jay, Captain Charles Bendire says: "Their call note is quite variable; some of them are almost as harsh as the *chaar* of the Clarke Nutcracker, others partake much of the gabble of the Magpie, and still others resemble more those of the Jays. A shrill, querulous *peeh, peeh,* or *whee, whee,* is their common call note. While feeding on the ground they keep up a constant chattering, which can be heard for quite a distance, and in this way often betray their whereabouts."

WILLIAM L. FINLEY.

The nuts of the piñon pines are the natural food of these birds. Juniper berries, grain from stubble fields, and insects, the grasshopper in particular, also form part of their general diet.

STARLINGS

Order *Passeres;* suborder *Oscines;* family *Sturnidæ*

STARLINGS are an Old World family containing some one hundred and fifty species divided among forty genera. They are not found in Australia and New Guinea. One species was introduced into America in 1890. They have long, pointed wings and short, square, or slightly notched tails. Although the wing is long, its tip falls short of the tip of the tail. The bill is as long as the head, and blunt at the tip. The feathers of the head, neck, chest, and breast are narrow and long; those of the under parts are pointed also. The plumage of the adult birds is more or less metallic. They have but one molt a year. They are among the most adaptable of birds, and will nest in any convenient place — in the recesses of sea-caves, in the interior of old stone-walls, in the burrow of a Cliff Swallow, or, and this more often, about human habitations. Many pairs raise two broods in a season.

STARLING

Sturnus vulgaris *Linnæus*

A. O. U. Number 493 See Color Plate 74

General Description.— Length, 8 inches. A black bird with a yellow bill.

Color.— General color, *glossy black, the head and neck glossed with purple,* the wing-coverts with blue or violet, other parts with green, becoming bluish, or even sometimes violet, on rear under parts; feathers of back of head, hindneck, back, shoulders, and rump tipped with pale brown, producing *conspicuous triangular specks;* the lesser, middle, and greater wing-coverts, primary-coverts, wings, tail, and upper tail-coverts margined with the same; feathers of under parts of the body, tipped with white, forming narrow wedge-

shaped spots, growing gradually larger toward the rear, the under tail-coverts broadly margined with brownish-white; primaries, inner quills, and tail with a central area of brownish-gray, bounded by a submarginal border of dull black; bill, *yellowish, dusky in winter*; iris, brown.

Nest and Eggs.— NEST: Placed in tree cavities, eaves of houses, church steeples, or any location that takes its fancy; made of twigs, grasses, leaves, paper, straw, and lined with fine grass. EGGS: 4 to 6, plain pale greenish or bluish-white.

Distribution.— Western and central Europe; accidental in Greenland; introduced into and partly naturalized in the eastern United States.

The Starling may be recognized at a distance by its general appearance and manner of flight. It is about the size of the Red-winged Blackbird, but has a very short tail. It is dark or dusky in color, and during the breeding season its bill is bright yellow. Those who see it for the first time usually describe it as a Blackbird with a yellow bill. In flight it flutters like a Meadowlark, but seldom sails as much as does the Lark.

In Europe, it is one of the most abundant birds. It is conceded there that the benefits it confers on the farmer far exceed the harm that it does by attacks on fruit or crops; nevertheless, there are many instances on record where the Starling has become a pest to the farmer. The habit of collecting in enormous flocks is the great element of danger. When a great number of any species having grain-eating or fruit-eating propensities is collected in one locality they are capable of doing great harm in a very short time. Such flights, however, are often productive of good.

The forest authorities in Bavaria, during an invasion of the spruce moth or "nun" in 1889-91, noted great flights of Starlings, which were credibly estimated to contain as many as ten thousand in a flock, all busy feeding on the caterpillars and pupæ of this moth. The attraction of Starlings to such centers was so great that market gardeners seriously felt their absence in distant parts of the region.

Miss Gertrude Whiting of New York City writes me that in Switzerland enormous flocks of Starlings come down like black clouds on the vineyards. In ten or fifteen minutes they pluck the fruit absolutely clean, and the cultivator is robbed of his year's crop. In the south of France Starlings are said to be similarly destructive to the olive crop. This indicates what would happen in America were the Starlings to become abnormally numerous.

It is of particular interest to learn what we can of the nature of the Starling in its own country in its relations to other birds. In Europe the Starling is known to eat the eggs and the newly hatched young of Sparrows, but this habit does not seem to have been generally noted. Mr. Clinton G. Abbott, who is very familiar with the bird in Europe, writes me that he considers its pugnacious nature to be by far the most serious objection to the Starling, and that no birds which nest in holes can have any peace at all until all the Starlings are satisfied.

As undesirable qualities are often accentuated when a bird is introduced into a new country, we cannot view the introduction of the Starling without some apprehension. When introduced into New Zealand it became a very destructive pest, and no one can tell what may be the result of its acclimatization here. Since the successful introduction of the Starling in America the Bureau of Biological Survey of the United States Department of Agriculture has been given authority to regulate the importation of foreign mammals and birds into this country, and in the future there is very little likelihood that the zeal of misguided persons who wish to import foreign species will have such results as followed the introduction of the House Sparrow.

Probably we shall never know how many attempts have been made to introduce the Starling into this country. I have learned of several. But the introductions undertaken by Mr. Eugene Scheifflin at Central Park, New York City, are credited as the first to be successful. The first of his importations numbered eighty birds, which were liberated on March 6, 1890, and forty more were released on April 25, 1891. Some of these birds remained in the park or its vicinity and bred there, but in 1891, twenty appeared on Staten Island, and in 1896 they had increased their numbers and had extended to Brooklyn. In 1898, according to Dr. T. S. Palmer of the Biological Survey, the species had obtained a strong foothold in the neighborhood of New York City; it had reached Stamford, Connecticut, and Plainfield, New Jersey. One hundred birds were liberated near Springfield, Massachusetts, in 1897, but Mr. Robert O. Morris of Springfield states his belief that they did not survive the following winter. It may be possible that they went south, but not one was reported from Springfield again until the year 1908. In the meantime the species had spread over the

first forty miles of Long Island, up the Hudson River to Ossining and beyond, through much of eastern New Jersey and into Pennsylvania and Delaware.

When the brief period that has elapsed since the introduction of the Starling and the small number introduced are considered, it must be conceded that the increase and the dissemination of the species have been rapid. It has not increased or spread so rapidly as did the House Sparrow, but the Sparrow's numbers sprang not from one importation, but from many, that took place at widely scattered localities during a series of years, something that has been prevented in the case of the Starling. Its increase has been rapid in most of the region now occupied by it, where it is in many places second in numbers only to the Sparrow and the Robin.

The increase and spread of the Starling is due to its fecundity and its general fitness for the battle of life. It often has two broods in America, as it has in Europe. The Starling's physical fitness for the struggle for supremacy is seen at once on an examination of its anatomy. It is a very hardy, muscular, and powerful bird. It has the physical characteristics of a Crow. It is exceedingly tough and wiry, and the bill, its principal weapon of offense and defense, is superior in shape to that of the Crow. It is nearly straight, long and heavy, tapering, and nearly as keen as a meat ax, while the skull that backs it is almost as strong as that of a Woodpecker. Mentally the Starling is superior to the Sparrow, and, while brave and active in the face of any foe that it can master, it shows the acme of caution and intelligence in its relations with man or any other creature too powerful to master. While it is comparatively fearless where it is unmolested, it is always on guard, and if hunted becomes more wary than a Crow. It is a handsome bird, and though it has little merit as a songster, it has many pleasant whistling and chattering notes and some talent as a mimic. Its alarm note is a harsh, rasping low-pitched call.

Its insect-eating habits, its beauty, and its cheery notes have already made it many strong friends in this country who will protect it stoutly; and this protection, together with the bird's ability to take care of itself and keep out of danger, precludes all possibility of its extermination here if it proves undesirable.

Drawing by R. Bruce Horsfall

STARLING (⅓ nat. size)

A naturalized American citizen of questionable character

Were rewards or bounties offered with a view to its extinction, Blackbirds, Meadowlarks, and other native species, which consort with the Starling, would be among the chief sufferers. The Starling is here to stay, and we must make the best of it. Whether its presence will result in more good than harm will depend largely on the ratio of its increase. We now know enough of its habits in this country to forecast some of the results that may be expected from an excess of the species.

When any animal is successfully introduced into a new country, and increases rapidly, its advent naturally tends to upset the biologic balance. Its native natural enemies have been left behind in its own country, where it had a settled and established place in a series of natural forces that had been in existence for centuries, and it

becomes an interloper in the new land, among conditions and forms of life entirely new. If the species is weak or unfit for its new environment, or if it is introduced into a land differing much in climatic conditions from its own, it may die out; but if it is strong and fit, and if the climate is suitable, it is likely to increase abnormally in numbers, and it cannot so increase without displacing some of the species native to the soil.

The Starling is a hardy, capable, and prolific bird, which, like the Sparrow, has had many centuries of experience in getting its living in populated countries and in cultivated regions in close relationship with man, and it has thriven in such an environment. It thus has an advantage over our native species similar to that enjoyed by the Sparrow, which, subsequent to its introduction here, displaced so many native birds during the latter quarter of the nineteenth century. How can the Bluebird or the House Wren, which have been accustomed to life about human habitations for a comparatively short time, compete with such a bird as the Starling?

The friends of the Sparrow argued that it would fill a void in our city life that no native bird could possibly occupy, inasmuch as it would always have in the streets a plentiful supply of food that would otherwise be mainly wasted, and that it would be able to maintain itself where native birds would starve. No such argument can be advanced in favor of the Starling. If there was an opening for the Sparrow it was filled long ago, and the Starling cannot occupy the place in our urban life now filled by the Sparrow, even if it drives out the latter. No doubt in the city the Starling is preferable to the Sparrow, but it cannot displace the Sparrow without indirectly making trouble for native species also. The Sparrow and the Starling will live together, as in England, but the Starling will drive the Sparrow away from all nesting places that are suitable for its own use, and the Sparrow will in turn eject Tree Swallows, Martins, Bluebirds, Wrens, and other native birds from their present nesting places, that it may secure homes in place of those taken by the Starling. Already this adjustment is going on. First in the city, then in the suburbs, and finally in the country our native birds which normally nest in hollow trees will be driven to the wall if the Starling continues to increase in numbers, and there is now no adequate check to its increase in sight. In America as in Europe the Starling seeks nesting places about buildings. It breeds in dovecotes, such church steeples as furnish safe nesting places, in holes and crevices about houses, in niches under the eaves, in electric light hoods, bird houses, nesting boxes, Woodpecker holes, and hollow trees. Therefore, in seeking nesting places it comes directly in competition with Pigeons, Screech Owls, Sparrow Hawks, Flickers and other Woodpeckers, Nuthatches, Crested Flycatchers, Martins, Bluebirds, Tree Swallows and Wrens, and as it extends its range to the west and south it must compete with other species. In the region already occupied it has proved itself capable of driving out all the above-mentioned species except the Screech Owl, which doubtless will prove its master.

In America the Starling is not regarded as particularly pugnacious except where it has to fight for nesting places or for food. In such cases it is combativeness personified, and its attacks are well directed and long continued. Usually in its competition with the Sparrow there is no fighting; for the Sparrow soon learns that it is no match for the Starling, and the contest degenerates into a straw-pulling match, each bird alternately clearing out the nesting material that the other brings. If the owner of the nest joins battle with the Starling and fights stubbornly it is driven off, or it is sometimes killed in its nest. This daring interloper attacks birds much larger than itself, and the evidence shows that almost invariably it prevails in the end. The Sparrow, the Bluebird, and the Flicker have been credited with repelling it for a time, but eventually the Starling wins, because of its increasing numbers, superior strength, courage, and fitness. As the Starling comes, native birds, whose nesting places it covets, must go, and many of these birds are more desirable than the Starling. The skillful manner in which it evicts the Flicker inspires the observer with a certain admiration for its superior strategy and prowess. The Starlings quietly watch and never interfere while the Flicker digs and shapes its nesting place in some decaying tree; but when the nest is finished to the satisfaction of the Starlings it is occupied by them the moment the Flicker's back is turned. On the return of the Flicker a fight ensues, which usually results in the eviction of the particular Starling then in the hole, which, however, keeps up the fight outside while another enters the hole to defend it against the Flicker, which, having temporarily vanquished the first, returns only to find a second enjoying the advantages of possession. As Mr. Job says, the Flicker is confronted with "an endless chain of Starlings," and finally gives up.

In this or some other way the Starlings, working together, always succeed in driving the Flicker from its home, in which they immediately begin to build. The moment the Flicker gives up vanquished, the Starlings molest it no more, allowing it to hew out another hole, either in the same tree or in one near by, when a similar fight ensues with more Starlings; and so the Flicker is driven literally from pillar to post until it has prepared sufficient homes for the Starlings in its neighborhood and all are satisfied, or until it gives up in disgust and leaves the vicinity of its aggressive neighbors. The principal spring work of the Flicker in the future will be the preparation of nesting places for the Starling. It is probable that the Hairy Woodpecker and the Red-headed Woodpecker also will serve as *carpinteros* for the interloper, but the Downy Woodpecker will be exempt from such service, as the entrance to its domicile is too small to admit the Starling. There is no evidence that the Starling has attempted to dispossess the Screech Owl; but Mr. Clifford M. Case of Hartford, Connecticut, states that he has seen a Starling whip and drive away a male Sparrow Hawk. Many correspondents report that Flickers, Bluebirds, English Sparrows, and Wrens have been driven from their nesting places in old orchards by the Starlings.

The Starling will compete with native birds for their food supply. Mrs. P. R. Bonner of Stamford has observed the intruder frequently attacking Robins and other birds, and driving them away from a lawn where they formerly fed. The Starling is a sphinx-like bird and ordinarily treats other birds with a sort of contemptuous tolerance. In winter it even permits Robins, Blackbirds, and Meadowlarks to join its great flocks; but as these flocks increase they must eventually clean up most of the winter food supply, and leave our native winter birds without sufficient sustenance.

The food of the Starling in America seems to be similar in general character to that which it consumes in Europe. It is particularly useful, there, however, because of its fondness for the destructive land snails, which are very numerous in many regions. It cannot be expected that it will be thus beneficial here, for we are not similarly afflicted in this country. The Starling can give no service here that cannot be equally well performed by our own Blackbirds, Meadowlarks, Bobolinks, Sparrows, and other birds, but it will be useful where these birds are not numerous enough to keep the insect enemies of grass lands in check. Already, however, the Starling has begun to show a capacity for harmfulness which may be expected to become more prominent as its numbers increase. In the breeding season small flocks go to the cherry trees, and as they alight for a few minutes a shower of cherry stones may be heard. Sometimes they strip a tree completely and then go to another. In other cases they feed in a desultory way, taking toll from all the trees in a neighborhood.

Photo by E. H. Forbush

STARLING

At nesting hole with caterpillars for its young

Many observers state that the Starling eats apples, but this habit appears thus far to be confined mainly to apples left on the trees late in the fall, after the crop has been gathered. Flocks sometimes descend on a strawberry bed and considerably reduce the crop.

In the fall, when Starlings gather into large flocks of a thousand or more, they are often very destructive to corn in the ear. In Europe they

feed to some extent on small grains, but I have not seen any evidence of that here. In New Jersey in the month of June they seemed to prefer the cherry trees to the wheat fields, and did not appear to molest the wheat at all. A few gardeners claim that they pull sprouting corn and peas.

Mr. Alfred C. Kinsey writes that he noticed the parent birds supplying nestlings with what proved to be the staminate flowers of the hickory. Later on, in different localities, the same peculiarity was noticed. If such feeding becomes extensive, it will bring about a failure of nut crops. He has also noticed these birds on grape vines and in trees wantonly tearing off large pieces of leaves, as well as doing damage to various fruit crops. Some observers assert that the Starling also destroys the buds of trees, but I have been unable to get definite evidence on this point.

EDWARD HOWE FORBUSH, in *The Starling.*

ICTERIDÆ

Order *Passeres;* suborder *Oscines;* family *Icteridæ*

A SATISFACTORY vernacular name for this family is wanting. The group has been known by the name of Hangnests, but only certain members build pensile nests. From the superficial resemblance of a small percentage of its members to the Old World Orioles and Starlings, the family has been known as the American Orioles or American Starlings. Other names which have been used, as Grackle, Crow Blackbird, etc., are equally non-distinctive or of limited pertinence. Robert Ridgway says the name Troupial, derived from the French *troupe* and referring to their habit of flocking, has more general applicability than any other term.

In this family the bill varies greatly as to relative length and thickness, but is never conspicuously longer than the head and always more or less conical and sharp; the outlines are usually nearly straight, but sometimes the tip curves downward. The nostrils are never concealed although sometimes the membrane immediately behind them is covered. The bristles at the corners of the mouth are altogether obsolete or but very faintly developed. The wing is extremely variable, but usually the tip is moderately extended and terminates abruptly. The tail is variable as to relative length, form of tip, and shape of the feathers; it is always more than half as long as the wing but never conspicuously longer than the wing, never forked nor notched and is usually rounded, sometimes double-rounded, and occasionally graduated and folded like a fan; usually the tail-feathers, which always number twelve, are of nearly equal width throughout, but sometimes they are wider at the tips and sometimes narrower; in one species, the Bobolink, they abruptly taper to a point and are rigid at the tips.

The *Icteridæ* comprise birds of most various habits. Some live among the trees, and if placed upon the ground they are almost incapable of progression; others are terrestrial (though frequently alighting on trees and sometimes nesting there) and walk upon the ground with the grace and dignity of a Crow; many inhabit reedy marshes, and these usually nest in colonies, building open cup-shaped nests attached to the upright stems of water plants. The Orioles build pensile or hanging nests attached to the branches of trees but do not live in colonies.

Many species are remarkable either for the fullness and richness or other remarkable character of their notes, some of them being songsters of high merit, while others utter only the most harsh and discordant sounds. The Cowbirds are parasitic, like the English Cuckoo, always laying their eggs in the nests of other birds. The plumage varies from uniform black (sometimes with brilliant metallic gloss) or somber brown to the most showy combinations of yellow, orange, or scarlet, and black.

The group is peculiar to America and belongs particularly to the tropical part and to South America and the adjacent islands. Nearly one hundred and fifty species are known, of which by far the greater number are represented only in South America.

Courtesy of the New York State Museum

RUSTY BLACKBIRD *Euphagus carolinus* (Müller)

ADULT MALE IN SPRING

IMMATURE IN AUTUMN

ADULT MALE IN AUTUMN

RED-WINGED BLACKBIRD *Agelaius phoeniceus phoeniceus* (Linnaeus)

MALE IN AUTUMN

MALE IN SPRING

FEMALE

BOBOLINK *Dolichonyx oryzivorus* (Linnaeus)

MALE

FEMALE

All ½ nat. size

BOBOLINK

Dolichonyx oryzivorus (*Linnæus*)

A. O. U. Number 494 See Color Plate 73

Other Names.— Skunk Blackbird; Skunk-head Blackbird; White-winged Blackbird; Meadowwink; Towhee (mistake); Rice-bird; May-bird; Reed-bird; Butter-bird (Jamaica, B.W.I.); Meadow-bird; American Ortolan; Bob-lincoln; Robert.

General Description.— Length, 7 inches. Males in the spring and summer have the upper parts black and white and the lower parts black; males in the fall and winter and females all the year have the upper parts buffy-olive streaked with black, and the lower parts, pale buffy-olive. Wings, long and pointed; tail, shorter than wing with stiff, acute feathers; bill, conical and sharp.

Color.—Adult Male in Spring and Summer: General color, black; *hindneck buff; shoulders, rump, and upper tail-coverts, white* tinged with gray, especially the upper rump, which is sometimes uniform gray; shoulders edged with buff, forming streaks, especially along the center line; inner wing quill and innermost greater wing-coverts margined with pale yellowish passing terminally into grayish-brown; longer primaries narrowly edged with pale yellowish; inner webs of tail-feathers tipped with grayish; feathers of flanks and under tail-coverts margined with buffy or whitish; thighs with feathers on outer side more broadly margined with buff; bill, black; iris, brown. Adult Male in Fall and Winter: Similar in coloration to the adult female, but larger. Adult Female in Spring and Summer: General color above, light buffy-olive; crown with a broad center stripe of pale buffy-olive, and two broad lateral stripes of black, the latter streaked with light buffy-olive; back broadly streaked with black, the edges of some of the feathers light olive-buff, producing two nearly parallel narrow stripes wnen the plumage is properly arranged; rump feathers and upper tail-coverts with central wedge-shaped streaks of dusky (usually mostly concealed); wings and tail, dusky, with conspicuous edgings of pale yellowish and light grayish-olive; sides of head (including a broad stripe over eye), sides of neck, and under parts, light olive-buffy, more decidedly buffy or yellowish across chest and along sides and flanks, paler and straw-yellow on throat and abdomen; sides, flanks, and under tail-coverts, broadly streaked with dusky; a narrow dusky stripe behind eye; iris, brown. Adult Female in Fall and Winter: Similar to spring plumage, but more richly colored, especially the under parts.

Nest and Eggs.— Nest: Wonderfully concealed in a depression of ground in meadows; constructed of dried leaves, weed stems, coarse grass, and lined with finer grasses. Eggs: 4 to 7, pale drab, pearl-gray, or pale rufous, irregularly splashed and spotted with erratic lines and marks of umber, chestnut, lavender, and deep purple.

Distribution.— Eastern and central temperate North America; breeding from Pennsylvania, northwestern West Virginia, central Ohio, central Indiana, northern Illinois, southern Iowa, South Dakota, and Utah, northward to provinces of Quebec, Ontario, Manitoba, Assiniboia, and British Columbia (both sides of Cascade range), to about 40° on the Atlantic coast and 52° in the interior; west to Utah, northeastern Nevada, Idaho, and southeastern British Columbia; during migration southward through the West Indies, and the Atlantic coast of Central America to South America; also to the Galapagos Archipelago and the Bermudas.

Drawing by R. I. Brasher

BOBOLINK (½ nat. size)

The bird with a song like a hysterical music-box

Once upon a time somebody called the Bobolink the "Dr. Jekyll and Mr. Hyde of the bird-world." The Jekyll comparison doubtless originated with the Southern planters, who hated the bird for the damage it did in their rice-fields. Fortunately it has come to have less and less force as rice-growing has diminished in the South, though Robert's reputation in those parts was still bad enough to cause his name to be omitted from the list of birds to whom Uncle

Sam guaranteed protection under the Federal Migratory Bird Law of 1913.

In the Northern States, Robert has always been loved as the handsome and rollicking minstrel of the meadows. In its invariable and infectious spontaneity, and the fine frenzy of its delivery, his song stands alone in the musical utterances of American birds. Thoreau caught the spirit and the technique of the effort when he wrote "This flashing, tinkling meteor bursts through the expectant meadow air, leaving a train of tinkling notes behind." The song baffles description in words, or reproduction by any one musical instrument. William Cullen Bryant's oft-quoted poem contains lines which do some justice to the spirit of the song and of the scene of its delivery, but the refrain, "Bobolink, bobolink; spink, spank, spink," is a feeble effort to reduce its notes to spoken words. Mr. Dawson's transliteration, *Oh, geezeler, geezeler, gilipity, onkeler, oozeler, oo,* really is a clever rendition, in that it suggests clearly the essentially liquid and vowel character of the opening notes. But

Photo by H. T. Middleton

REED BIRD

The Bobolink in fall plumage

it should be added that, having proceeded thus far, and in a rapid but comparatively restrained manner, Robert is likely to become suddenly a sort of hysterical music-box, and to produce a burst of sound pyrotechnics which make one fear that the next second he is going to explode outright and vanish in a cloud of feathers. This seems all the more probable when the hysteria occurs, as it often does, while he is on the wing.

There seems to be no record that Robert has ever actually blown up, but as far as many people are concerned he literally disappears from the earth very soon after his family responsibilities are discharged; for the fall molt completely transforms his appearance. The sharply outlined black, white, and buff uniform then gives way to a dull mottling of the same colors, which approaches the normal plumage of his striped and demure wife. Then he becomes the Reed-bird, and as such has to run the gauntlet of gunners who lie in wait for him on his southern migration, in order that banqueters may have their "reed-birds on toast." GEORGE GLADDEN.

Photo by A. A. Allen

FEMALE BOBOLINK

When Robert on his southward migration reaches Jamaica, B. W. I., he assumes another alias — and a very appropriate one — Butterbird. Fresh from the rice-fields of the southern

United States both he and his wife are veritable balls of fat and many are killed for food.

Sometimes Robert is not content with one wife and mates with two or more. The young often leave the nest before they are able to fly, but the mother still continues to care for them until they can fend for themselves.

On its northward migration the Bobolink enters the United States from the south at a time when the rice fields are freshly sown, pulls up the young plants, and feeds upon the seeds. Fortunately its stay in this district is not long and it soon hastens onward to its breeding ground in the north. While rearing its young, its chief food and the almost exclusive diet of the nestlings is insects. Among these insects weevils, cutworms, and grasshoppers are conspicuous. After the young are able to fly, the whole family gathers into a small flock and begins to live upon vegetable food. This consists for the most part of weed seeds and grass seeds. Sometimes grain, most commonly oats, in the milk, is eaten; but the damage done in this way is small and is more than offset by the enormous destruction of weed seeds.

As the summer advances the small flocks unite into larger ones and move southward. On their way they frequent the reedy marshes about the mouths of rivers and on the inland waters of the coast region. During this migration they subsist on the wild rice. It is at this time that the Bobolink is commonly known as the Reed-bird and, fattened by its rice-diet, is treated as a game bird.

By the end of August the Bobolink and its family have left their breeding grounds. It reaches the cultivated rice fields in the South as the crop is ripening. A decidedly useful bird in its northern home, the Bobolink becomes a serious pest when it reaches the rice fields. Uniting with various species of Blackbirds, it pillages the fields. The havoc made on the ripening grain by the Rice-bird, as the Bobolink is commonly known in this part of the country, is very great and it not infrequently causes losses of thousands of dollars to individual planters.

COWBIRD

Molothrus ater ater (*Boddaert*)

A. O. U. Number 495 See Color Plate 74

Other Names.— Cow Blackbird; Cow Bunting; Lazy Bird; Brown-headed Blackbird; Cuckold; Cow-pen Bird; Buffalo Bird; Brown-headed Oriole.

General Description.— Length, 8 inches. Males are greenish-black with brown fore parts; females are brownish-gray. Bill, shorter than head, conical, and compressed; wings, moderately long and pointed; tail, about ⅔ length of wing, even or slightly rounded.

Color.— Adult Male: *Head, neck, and upper chest plain brown*; rest of plumage glossy greenish-black, the gloss usually more violet (often distinctly so) on upper back, next to brown of hindneck; iris, brown. Adult Female: Above, brownish-gray, faintly glossed with greenish, the feathers with darker centers and blackish shaft-streaks, especially on back; wings and tail more dusky brownish-gray with paler edgings, these nearly white on longer primaries; under parts, paler brownish-gray usually streaked (narrowly) with darker, the chin and throat much paler (sometimes almost dull whitish), and, together with the chest, unstreaked; iris, brown. Young: Above, varying from dark hair-brown to sooty grayish-brown, the feathers with narrow pale grayish-brown and whitish margins (these usually indistinct and often obsolete on crown and hindneck); the wing-coverts more conspicuously margined with dull buffy whitish; under parts, conspicuously streaked with sooty grayish-brown or hair-brown and dull buffy or whitish, the latter on margins or lateral edges of feathers, the darker color prevailing forward.

Nest and Eggs.—A noted parasite, depositing its eggs, usually singly, in nests of smaller birds, but as many as five have been found in one nest; number of eggs unknown and the circumstances of deposition render a correct conclusion impossible. Eggs are white, spotted and blotched pretty generally over entire surface with chestnut and burnt-umber.

Distribution.— Temperate North America in general, except portions of Pacific coast; north to about 49° in more eastern portions, to 55° 30′ in the interior; west to British Columbia, Washington, Oregon, Nevada, and southeastern California; south in winter to central and southeastern Mexico; breeding south to Georgia, Louisiana, and Texas.

The Cowbird is that interesting phenomenon in nature called a parasite. Like the European cuckoo it leaves all family care to others. It might well serve as the emblem of free love. Many changes have been rung on the fidelity of birds to their mates, on the mating of certain

birds for life and the sanctity of such union, but the Cowbird is an exception to all rules of virtue and monogamy among birds. The relations of the sexes are free and untrammeled. Both male and female confer their favors more or less generally and there seems to be practically no jealousy or quarreling. In their wooing, the males swell and bristle something after the manner of a Sage Cock, bowing and spluttering in their attempts to make themselves agreeable. The wings and tail are spread and the birds almost go into convulsions in their efforts to sing but produce nothing more than a rather unmusical *chuck see*. The females receive them all with generous impartiality. The offspring of these brief and happy unions are not nourished and cared for by the community, but are foisted on foster-mothers of other species, while the happy, care-free Cowbirds, with love and song, enjoy the long summer days.

In Massachusetts, the Cowbird deposits eggs from April until late in June and it is probable that within that time at least ten or twelve eggs are laid. Possibly more than half of them, on the average, are destroyed in one way or another, but for every Cowbird that comes to maturity a brood of some other species must perish. When the female Cowbird finds the duties of motherhood imminent she hunts stealthily through woods, bosky dells, shade trees or orchards until she discovers some smaller bird's nest containing one or more fresh eggs. If the owner of the nest is engaged in laying an egg, the Cowbird waits if possible until her victim has left the nest and then, slipping in, deposits her own egg. Sometimes she is unable to find an unoccupied nest in time and has been known to lay an egg in an unfinished domicile or even on the ground. At any rate she leaves it in the most convenient place and apparently continues on her frivolous way with no further thought of it. There is reason for the belief that sometimes eggs deposited on the ground are afterward carried to a nest.

Strange to say, although the foster-parents in some cases seem to discover the intrusion, they do not commonly resent it, although there is some evidence that they occasionally destroy the Cowbird's egg. The Yellow Warbler has been known to build a second nest over it and, when the offense has been repeated, even a third. The victims sometimes desert the nest, but this seems to be a rare occurrence. Usually they incubate and hatch the interloper. The birds chosen as foster-parents frequently are much smaller than the Cowbird, and as the Cowbird's egg is commonly larger than their own, it receives more warmth. For this reason and because it requires a shorter period of incubation it hatches earlier. The young Cowbird, being larger, and getting an earlier start, soon monopolizes nearly all the food, while the

Courtesy of Am. Mus. Nat. Hist.

COWBIRD (⅞ nat. size)

The social parasite of the American bird world

Courtesy of the New York State Museum

PURPLE GRACKLE
Quiscalus quiscula quiscula (Linnaeus)
MALE

STARLING
Sturnus vulgaris Linnaeus

BRONZED GRACKLE *Quiscalus quiscula aeneus* Ridgway
MALE FEMALE

COWBIRD *Molothrus ater ater* (Boddaert)
MALE FEMALE

All ⅛ nat. size

rightful heirs dwindle away and perish. In some cases the young Cowbird claims all the time of the foster-mother during the day, so that her own eggs become chilled and do not hatch; in others the eggs of the foster-parent are punctured, apparently by mother Cowbird. If, after all, any of the rightful occupants of the nest survive, the young Cowbird, taking the middle of the nest, grows so much faster than they that it crowds them out and thus, by hook or by crook, soon has the nest to itself and receives all the food that should have nourished an interesting family. In the meantime it has grown so strong and well-feathered that in about seven days after it leaves the shell it has outgrown the nest and climbed out upon the branches. Later it follows its foster-parents about, begging for food. It is a common sight to see a small Sparrow or Warbler feeding a young Cowbird almost twice its size. The big clown looks as if it might swallow the little bird which ventures to plunge insects and worms into that gaping, capacious, clamoring throat. At last the young Cowbird, being well grown, well feathered, and more than able to take care of itself, searches out the care-free flocks of its kind, joins one of them, and the troubles and cares of its foster-parents are over for the season, unless they attempt to rear a second brood, when the story may be repeated.

Another interesting phenomenon about the Cowbird is its close association with cattle. As it ranges over a large part of North America and well into Mexico, and as it feeds much on insects found in grass land, it uses the cattle as dogs to flush its game. Wherever cattle feed, the Cowbird may be found. It may be seen more commonly in the West than in the East, around and close in front of the cattle, as they graze, chasing and catching insects which flee from the towering kine. The Cowbird passes freely beneath the cow's belly and even alights on her back to seize the insect parasites, flies, etc., that find harborage there. Apparently the Cowbird rarely associates with horses, sheep, or swine but gives its attention chiefly to cattle. In this respect it resembles the introduced Starling, the Rhinoceros Bird, and a few other notable species which seek the company of certain large animals. The Cowbird, however, is not confined to the pasture but visits garden, field, wood, and orchard and often roosts in the marsh, flocking with the Blackbirds.

This species remains quite late in the north and flocks have been seen in winter in southern New England, but the greater number winter in the Southern States where they feed much in the neighborhood of water.

EDWARD HOWE FORBUSH.

The food of the Cowbird has been carefully studied and the tabulated results prove that were its food-habits alone to be considered this bird would have to be placed among the beneficial rather than the harmful species. But it must not be forgotten that in causing the death of multitudes of small birds, all of which are valuable to the agriculturist, the Cowbird is doing an injury for which his beneficial work in other directions can hardly atone. The lives of two to

Photo by H. K. Job Courtesy of Outing Pub. Co.

NEST OF CHESTNUT-SIDED WARBLER

Containing a young Warbler, an egg, and a young Cowbird

five other young birds is the price of each Cowbird. About 22 per cent. of its food is animal matter and 78 per cent. vegetable. It appears to eat few beneficial insects, avoiding the predacious ground beetles, but eating a few wasps, bees, and ants. Its best work is in destroying grasshoppers. It also eats boll weevils and caterpillars, the latter including cutworms and armyworms. Contrary to expectation it eats few flies or maggots, and there is no proof that it eats intestinal worms from cattle droppings or ticks from the animals themselves.

The Cowbird does no harm to cultivated fruits. Its vegetable food consists mainly of weed seeds and grain, the former predominating and the latter being largely waste.

In Mexico, Lower California, and the adjacent parts of the United States, there is found a small edition of the Cowbird, which is called the Dwarf Cowbird (*Molothrus ater obscurus*).

RED-EYED COWBIRD

Tangavius æneus involucratus *Lesson*

A. O. U. Number 496

General Description.— Length, 8½ inches. Plumage, black, dull in the female and silky in the male. Bill, shorter than head, stout, and conical; wings, moderately long and pointed; tail about two-thirds length of wing, slightly rounded, and the feathers broadest at the tips.

Color.— Adult Male: A conspicuous erectile ruff on sides of neck; head, neck, and body, dark greenish-bronzy, the plumage soft and silky but not smooth, presenting the appearance of having been wet and imperfectly dried; tail-coverts, blue-black, the upper ones glossed with violet; wings, glossy dark greenish-blue, brightest on greater coverts, and inner wing quills less bright, as well as more greenish; on primaries, primary coverts, lesser wing-coverts, dark metallic-violet, the middle coverts violet-bluish; tail, dark metallic bluish-green or greenish-blue; iris, red. Adult Female: Dull black, the under parts, especially throat, sometimes dark sooty-brownish; back and shoulders very faintly, the wings, upper tail-coverts, and tail strongly, glossed with bluish-green; neck ruffs much less developed than in the male. Young Male: Dull sooty black or dark sooty, the feathers of the under parts of the body with narrow margins of paler. Young Female: Paler and grayer than the young male; above sepia or grayish-sepia, beneath paler and grayer with indistinct paler narrow margins to the feathers.

Nest and Eggs.— Nest: Builds no nest, laying eggs in other birds' nests. Eggs: Plain bluish-green without spots.

Distribution.— Southern Texas (breeding north to San Antonio), through eastern Mexico, and Central America (to Isthmus of Panama?).

The Red-eyed Cowbird is a handsomer bird than that feathered wretch, the Cowbird. The male, with his red eyes and glistening black coat, and his neck ruff elevated, makes quite an imposing appearance. The coloration of the female is duller than that of the male, but this fine apparel has no effect upon the bird's habits, which apparently are as reprehensible as those of her northern relative.

A close relative, the Bronzed Cowbird (*Tangavius æneus æneus*), lives in Mexico but wanders over the international boundary into Arizona. His reputation is just as shady as that of the rest of his family.

YELLOW-HEADED BLACKBIRD

Xanthocephalus xanthocephalus (*Bonaparte*)

A. O. U. Number 497

Other Name.— Copperhead.

General Description.— Length, 10 inches. Males are black with yellow fore parts; females are grayish-brown. Bill, decidedly shorter than head; wings, long and pointed; tail, over ⅔ length of wing, slightly rounded, the feathers rather hard and stiff.

Color.— Adult Male: *Head, neck, and chest, yellow* or orange; lores, eye region, forward portion of cheeks and chin, black; rest of plumage, uniform black, relieved by a white patch on the wing, involving the primary coverts (except their tips and shafts) and portions of the outermost greater coverts; anal region, yellow or orange; iris, brown. Adult Female: General color, dusky grayish-brown or sooty; no white on wings; a stripe over eye, cheeks, chin, and throat, dull whitish, usually tinged with yellow, passing into light yellow on chest; breast broadly streaked with white; anal tuft yellowish; iris, brown.

Nest and Eggs.— Nest: Fastened to tule stems from one to three feet above water; woven of sedge-grass, rather compact, bulky, thick-edged, and lined with finer blades; breeds in colonies, usually in center of large marshes. Eggs: 3 to 6, usually 4, grayish or greenish-white thickly and evenly spotted and blotched with drab, umber, and purplish-brown.

Distribution.— More open districts of western and central North America; north to southern British Columbia, Assiniboia, Athabasca, Keewatin (to about 58° 30′), and Manitoba; breeding east to the prairie sloughs of the upper Mississippi valley, as far as northeastern Illinois, northwestern Indiana, southwestern Michigan (?), southern Wisconsin, etc.; breeding southward to Arizona, New Mexico, probably to northern Mexico in general; in winter southward over greater part of Mexico; accidental straggler to Ontario, Quebec, Maine, Massachusetts, Connecticut, Pennsylvania, West Virginia, Maryland, District of Columbia, South Carolina, Florida, Cuba, and even to Greenland.

The Yellow-headed Blackbird has been called the Beau Brummel of the *Icteridæ* family. He dresses in a glossy black coat, and over his head, around his neck, and down on his chest he wears a rich yellow mantle. On each shoulder he displays a large, showy epaulette of white. Individuals have straggled as far east as Watertown, Mass., and there is a record of one specimen taken in Florida; but the Yellow-heads are essentially birds of the western prairies and marshes, where they frequently associate with the Red-winged Blackbirds and the Cowbirds, though the flocks may not actually intermingle. Their strongly developed gregarious instinct shows especially in their breeding habits, for large colonies of the birds often nest in close proximity to one another.

The Yellow-head's plumage is so striking and distinctive in its color contrasts that the identification of the bird ought to be easy for anybody. Like other members of its family the bird walks, when on the ground; indeed its gait is a rather pompous strut, and there is a suggestion of insolent superiority in the bird's manner which adds to the appropriateness of its nickname. Its only notes are hoarse chuckles and squeaks, all produced as if the effort caused discomfort, if not actual pain.

The young have lusty appetites, and they present a comical picture when they are able to leave the nest: they grasp a reed with each foot, and the weight of their bodies forces the reeds apart, so that the youngsters assume a sort of spread-eagle pose. But this, however, does not prevent them from keeping their mouths wide open meanwhile, nor does it hush their constant clamor for food.

The Yellow-headed Blackbird must be placed among the birds of doubtful usefulness. Agriculturists justly complain about this bird. It visits grain fields, especially oats and wheat, in large flocks and eats enough of the crop to cause serious loss. In its favor, however, is the eating of insects harmful to vegetation. These constitute about 30 per cent. of its food and are mainly beetles, grasshoppers, and caterpillars. The army-worm not infrequently is on the Yellow-head's menu.

Drawing by R. Bruce Horsfall

YELLOW-HEADED BLACKBIRD (⅓ nat. size)

The Beau Brummel of his family

RED-WINGED BLACKBIRD

Agelaius phœniceus phœniceus (*Linnæus*)

A. O. U. Number 498 See Color Plate 73

Other Names.— Swamp Blackbird; Red-winged Starling; Red-shouldered Starling; Red-shouldered Blackbird; Marsh Blackbird; Red-winged Oriole; Redwing.

General Description.— Length, 8½ inches. Males are black with red shoulders; females are dusky above and whitish below with streaks of dusky. Bill, shorter than head; wings, rather long and pointed; tail, ¾ or more as long as wing, and rounded.

Color.— Adult Male: Uniform deep black with a very faint greenish-blue gloss in certain lights; *lesser wing-coverts, bright vermilion (varying to scarlet or even, more rarely, to orange-chrome); middle coverts, wholly buff* (paler at tips, sometimes almost white in midsummer birds); iris, brown. Adult Female: Above, dusky, varied with paler streaks and edgings; crown with center stripe of pale buffy-grayish, the dusky broad lateral stripes streaked with pale buffy or grayish; shoulders, edged on inner webs with pale buffy-grayish, on outer webs with rusty; secondaries, innermost primaries, tail-feathers, and primary coverts narrowly edged with pale grayish or buffy-grayish, the upper tail-coverts margined with the same; greater coverts and outermost primaries edged with dull whitish; lesser coverts broadly margined with brownish-gray or red, or both (often extensively red); middle coverts, black, broadly margined terminally with white or pale buffy; a broad white stripe over eye, finely streaked with dusky, usually becoming buff or salmon color over and in front of eye; a broad stripe of dusky behind the eye; cheeks and under parts, dull white (the chin, throat, and cheeks often buff or salmon-pink), the under parts of the body broadly streaked with dusky (sometimes almost black), these stripes broadest on flanks; under tail-coverts, dusky margined with white or pale buffy; chin and throat sometimes immaculate, but the latter usually marked with small wedge-shaped or triangular streaks of dusky, the sides of the throat margined by a dusky stripe below cheek.

Nest and Eggs.— Nest: In bushes or small trees, but usually in reeds which are interwoven between the outside layer of sedge-grass of which the nest is composed; sometimes in the center of a tussock close to the ground, but usually two or three feet above it, and always in swampy places. Eggs: 3 to 6, usually 5, pale bluish or greenish-white, marked with pen lines of sepia or dark reddish-brown, arranged in a wreath around large end or scattered over entire surface.

Distribution.— Eastern United States and more southern British Provinces to about latitude 62°, except Florida and Gulf coast; west to eastern base of Rocky Mountains.

Drawing by R. I. Brasher

RED-WINGED BLACKBIRD (⅛ nat. size)

A feathered optimist of bogland

BI-COLORED RED-WING

Agelaius gubernator californicus *Nelson*

A. O. U. Number 499

Other Name.—Bi-colored Blackbird.

General Description.— Length, 8½ inches. Males are black with red shoulders; females are sooty-brown streaked with whitish. Bill, shorter than head; wings, rather long and pointed; tail, three-quarters or more as long as wing, and rounded.

Color.— Adult Male: Uniform deep black, with a faint bluish-green gloss in certain lights; *lesser wing-coverts rich poppy-red* or vermilion; middle coverts black, or (if not entirely black) at least broadly tipped with black, the basal portion tawny-buff or ochraceous; iris, brown. Adult Female: Dark sooty-brown, the back, crown, chin and throat streaked (usually broadly) with whitish, buff, or pinkish, the region over the eye streaked with the same, producing a stripe.

Nest and Eggs.— Nest: In low bushes or flags, along running streams or in swamps; similar in construction to Tri-colored Red-wing's. Eggs: 4 or 5, light bluish-white, marked around large end with dark brown lines and spots.

Distribution.— Northern and central coast district of California and northward to coast of Washington (Cape Disappointment); migrating or straggling eastward and southward in the same States.

TRI-COLORED RED-WING

Agelaius tricolor (*Audubon*)

A. O. U. Number 500

Other Names.— Tri-colored Blackbird; Tri-colored Oriole.

General Description.— Length, 8½ inches. Males are black with red and white on wings; females are brownish-gray streaked with whitish and dusky.

Color.— Adult Male: Uniform glossy blue-black, the plumage with a silky luster; *lesser wing-coverts dull crimson; middle coverts white, in abrupt and conspicuous contrast*; iris, brown. Adult Female: Above, dusky, the plumage with a strong bronzy luster in certain lights; crown, narrowly streaked with brownish-gray, most distinctly along the center, where, however, not forming a stripe; shoulders, with light brownish-gray edgings to inner webs; lesser wing coverts broadly margined with brownish-gray; middle coverts, abruptly margined with white or white and gray; greater coverts, secondaries, innermost primaries, and tail-feathers narrowly edged with light brownish-gray; outermost primaries narrowly edged with white; stripes over eye and on the cheeks of pale brownish-gray narrowly streaked with dusky; space between these lighter-colored stripes nearly uniform dark brownish-gray; chin and throat, pale grayish-buffy, the latter streaked with dusky, especially along sides; chest, streaked with dusky and pale grayish-buffy in about equal amount; rest of under parts, dusky with paler margins to feathers, these most distinct on breast; iris, brown.

Nest and Eggs.— Nest: In alders, willows, and tules; constructed of straw, mud, and coarse sedge-grass, lined with finer similar material. Eggs: 4 or 5, light blue, somewhat deeper than the Eastern Red-wing's, marked with a circle of gray-brown around large end and with black erratic lines and spots.

Distribution.— Valleys of California, northern Lower California, and southwestern Oregon. More common along coast and almost non-migratory.

There are several members of the Red-wing family and some one or more are found throughout North America from Mackenzie south to Costa Rica. The head of the family bears the family name Red-wing. The others are: The Sonora Red-wing (*Agelaius phœniceus sonoriensis*), found in southern California and southern Arizona; the Bahama Red-wing (*Agelaius phœniceus bryanti*), distributed over the southeastern coast of Florida, Florida Keys to Key West, and the Bahamas; the Florida Red-wing (*Agelaius phœniceus floridanus*), found in Florida (except the southeastern coast and keys) and west along the Gulf coast to Texas; the Thick-billed Red-wing (*Agelaius phœniceus fortis*), central North America, from Mackenzie and southern Keewatin south to northeastern Colorado and northern Texas and wandering eastward occasionally; the San Diego Red-wing (*Agelaius phœniceus neutralis*), breeding from eastern British Columbia south to Lower California, New Mexico, and western Texas; the Northwestern Red-wing (*Agelaius phœniceus caurinus*), found along the Pacific coast from British Columbia to Mendocino county, California; and the Vera Cruz Red-wing (*Agelaius phœniceus richmondi*), distributed along the southern coast and through the lower Rio Grande valley of Texas south through eastern Mexico to Central America.

Swamps, morasses and bogs are not considered very cheerful places, but a veritable Slough of Despond would lose its gloom in the presence of one of these feathered optimists with his sleek black jacket and smart red epaulets, and his persistent and jolly *o-ka-lee*. And such are the places the Red-wing loves, and in which it may always be found during the summer months, in the northern reaches of his range. Usually it breeds in large colonies, but single families — a male with several wives — are sometimes found in a small slough. Under this social condition

each of the females builds her own nest and rears her own little brood, while her lord and master struts in the sunshine and displays his brilliant plumage.

There is comparatively little variation as between individuals in this bird's characteristic combination of song and call-note, yet it is very differently transliterated by different persons, *O-ka-lee* seems as accurate as any of these attempts, and truer to the note than *conk-a-ree* or *cong-gar-ce,* since the opening tone seems to be very plainly the vowel O, rather than the consonant sound K. Mr. Mathews finds several phrases in the Red-wing's song and makes out of them the following jingle:

O-ka-lee, cong-quer-ree,
You chootea, Olong tea!
Gl-oogl-ee, Conk-a-tree,
Quange-se-tea, Shoo-chong tea!

And then he proceeds to adapt these deliverances to musical notation intended to represent variations of the phrase, with a result which might be entitled, "The Ballad of the Bog."

Other notes of the Red-wing are a dull *chuck,* or a prolonged whistle, sounded frequently in early summer, or a group of sharply accented scolding notes, or a single nasal call, not unlike that of the Nighthawk.

There is marked contrast between the color of the male and that of the female and the latter might easily be mistaken for a bird of a totally different species.

The Bi-colored Red-wing and the Tri-colored Red-wing might well be called California Red-wing and Western Red-wing, for they differ from the Red-wing only in their occurrence and but slightly in their plumage.

"Many complaints have been made against the Red-wing, and several States have placed at times a bounty upon its head. It is said to cause great damage to grain in the West, especially in the upper Mississippi valley; and the rice growers of the South say that it eats rice. No complaints come from the northeastern part of the country, where the bird is much less abundant than in the West and South.

"The examination of 1083 stomachs showed that vegetable matter forms 74 per cent. of the food, while the animal matter, mainly insects, forms but 26 per cent. A little more than 10 per cent. consists of harmful species. Weevils, or snout-beetles, amount to 4 per cent. of the year's food, but in June reach 25 per cent. As weevils are among the most harmful insects known, their destruction should condone for at least some of the sins of which the bird is accused. Grasshoppers constitute nearly 5 per cent of the food, while the rest of the animal matter is made up of various insects, a few snails and crustaceans. The few dragon flies found were probably picked up dead, for they are too active to be taken alive, unless by a Flycatcher. So far as the insect food as a whole is concerned, the Red-wing may be considered entirely beneficial.

"The interest in the vegetable food of this bird centers around the grain. Only three kinds, corn, wheat, and oats, were found in appreciable

NESTS AND EGGS OF RED-WINGED BLACKBIRDS

Placed amid the sweet flags

On a tussock of grass

quantities in the stomachs. They aggregate but little more than 13 per cent. of the whole food, oats forming nearly half of this amount. In view of the many complaints that the Red-wing eats grain, this record is surprisingly small. The most important item of the bird's food, however, is weed seed, which forms practically the whole food in winter and about 57 per cent. of the fare of the whole year. The principal weed seeds eaten are those of ragweed, barn-grass, and smartweed. That these seeds are preferred is shown by the fact that the birds begin to eat them in August, when grain is still readily accessible, and continue feeding on them even after insects become plentiful in April. The Red-wing eats very little fruit and does practically no harm in the garden or orchard. Nearly seven-eighths of its food is made up of weed seed or of insects injurious to agriculture, indicating unmistakably that the bird should be protected, except, perhaps, in a few places where it is overabundant." (F. E. L. Beal.)

Photo by H. T. Middleton

RED-WINGED BLACKBIRD

In some States there is a bounty upon his head

MEADOWLARK

Sturnella magna magna (*Linnæus*)

A. O. U. Number 501 See Color Plate 75

Other Names.— Common Lark; Old Field Lark; Field Lark; Marsh Quail; Medlark; Mudlark; Medlar; Crescent Stare.

General Description.— Length, 10½ inches. Upper parts, brown streaked with black; under parts, black and yellow. Bill, long and slender; wings moderately short; tail, short, with the feathers pointed; legs and toes, long.

Drawing by R. I. Brasher

MEADOWLARK (about ¼ nat. size)

One of the comparatively few birds that walk

Color.— Adult Male: Crown with a narrow center stripe of pale dull buffy, *separating two broad stripes of black*, streaked narrowly with brown, these streaks sometimes obsolete on forehead; a broad stripe, lemon-yellow from nostril to above eye, the remaining portion over the eye dull buffy-white; a narrow stripe behind eye of black; shoulders and the space between them, broadly black centrally edged and tipped with brown, but this passing on extreme edges and tip into buffy-whitish or pale buff, producing *distinct narrow streaks*; rump and upper tail-coverts, buffy, broadly streaked with black; middle pair of tail-feathers black centrally, pale brownish-gray or grayish-brown laterally; three outermost tail-feathers extensively white, the outermost (sometimes the one next to it also) almost entirely white; greater coverts light buffy grayish-brown edged with paler; secondaries similar in coloration to the greater coverts, the tertials usually with the black forming a large central irregular patch, but sometimes broken into regular and widely separated transverse lines or bars; primaries, dusky-grayish, the outermost broadly edged with white, the rest with outer webs broadly edged with light grayish-brown; throat, breast, and abdomen, *bright lemon-yellow; a broad crescent of black on chest*, the extremities of which blend into black spots on the cheeks; sides of breast, white broadly streaked with black, the sides and flanks similar, but tinged with buff and with black streaks rather narrower; iris, brown. Adult Female: Similar to the male, but much smaller; lateral stripes of crown more broadly streaked with brown, the stripe behind eye brown streaked with black, instead of uniform black; sides of head and neck, more buffy; black jugular crescent relatively smaller, the feathers usually tipped with light grayish; yellow of throat, breast, etc., rather duller.

Nest and Eggs.— Nest: Artfully concealed beneath tuft of clover, sedge, or grass; constructed of stems and coarse grass, and lined with fine blades; usually with covered, arched entrance to which a short winding path leads. Eggs: 4 to 6, crystal white thickly or thinly spotted with chestnut and reddish-brown; a second nesting not uncommon and probably usual.

Distribution.— Eastern United States and British provinces north to 54° and as far west as Great Plains. Not strictly migratory, often wintering as far north as lower New England States.

WESTERN MEADOWLARK

Sturnella neglecta *Audubon*

A. O. U. Number 501.1

Other Names.— Common Meadowlark; Field Lark of the West; Lark of the West.

Description.— Length, 9½ inches. Similar to the Meadowlark but different in proportions, the wings averaging longer, the tail shorter; *coloration much grayer and more "broken" above,* the broad lateral crown stripes never uniform black, but always (except in excessively worn plumage) streaked with pale grayish-brown; cheeks always largely yellow; blackish streaks on sides and flanks varied with spots of pale grayish-brown, the ground color of these parts paler buffy (often white); black jugular crescent averaging decidedly narrower; and yellow deeper.

Nest and Eggs.— NEST: On ground beneath a tussock of grass or weeds; constructed of grass, usually roughly arched with same material. EGGS: 3 to 7, white, spotted all over in varying amount with shades of brown and purple.

Distribution.— Western United States, southwestern British Provinces, east to prairie districts of Mississippi Valley, in Minnesota, Iowa, Missouri, Indian Territory, and Texas (occasionally to Illinois, Wisconsin, and southern Michigan, accidentally to Massachusetts?); north to southern British Columbia, southern Alberta, southwestern Saskatchewan, and western Manitoba; south over northern Mexico.

Every once in a while, well-meaning persons arise to remark that the Bald Eagle is not a fit emblem for this country, because he is a robber,

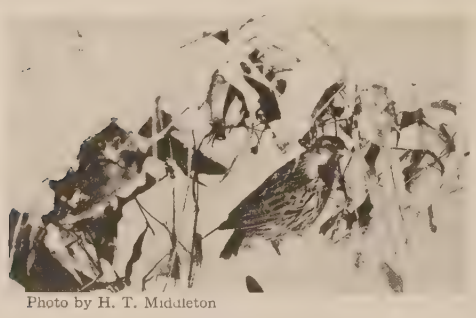


Photo by H. T. Middleton

MEADOWLARK IN SNOWDRIFT

an eater of carrion, and so on. Then they suggest a substitute. One of these substitutes who, a few years ago, had many champions, was the Meadowlark, because, as his friends truthfully averred, he is a beautiful bird and a highly useful one, with no bad habits; besides which he is known, in slightly variant forms, throughout Uncle Sam's domains, and finally because he is distinctly a bird of the Americas. All of this was interesting, and especially the fact that the Meadowlark's kind is not to be found outside of this hemisphere; but for all that, the Bald Eagle apparently was never in serious danger of losing his political job.

The Meadowlark has, however, a just claim on the respect and affections of the people whose country he adorns, and in whose fields he is a characteristic and conspicuous figure. If you see him plainly in the grass, before he takes wing, you can hardly miss his fine yellow breast with its sharply drawn crescent of glossy black; and when he springs into the air and speeds away in his peculiar half-fluttering, half-sailing flight, the white outer tail-feathers are equally conspicuous. Furthermore, you will notice — if you are observant — that on the ground he neither hops nor runs, but always walks, a style of locomotion which is comparatively uncommon among birds; and that immediately upon alighting he flirts his tail vigorously once or twice, thereby showing again the white outer feathers.

Though most of the Meadowlarks obey their migratory instinct, it is not at all uncommon to find the species in meadows covered with snow and swept by the pitiless winds of the coldest winters. From this you may know that he is a hardy bird, and you should guess, also, that he is a great eater of weed-seeds.

The Eastern Meadowlark is no such singer, to be sure, as is his neighbor, the Bobolink, yet there is infinite and invariable cheerfulness in his characteristic whistled phrase, which is always slurred. The Western Lark has a beautiful warbling song, very suggestive of the Baltimore Oriole but more prolonged. It rivals that of the Rose-breasted Grosbeak. By this difference of song you may distinguish between the two forms.

More than half of the Meadowlark's food consists of harmful insects; its vegetable food (27 per cent.) is composed of noxious weeds, grass seeds, and waste grain; and the remainder is made up of useful beetles or neutral insects and spiders. When it is considered that the bird feeds exclusively on the ground, it seems remarkable that so few useful ground beetles are taken. Grasshoppers are the most important item of food of the Meadowlark, amounting to 29 per cent. of the food of the year and 69 per cent. of the food of August. Beetles are next to grasshoppers in importance. Caterpillars, too, form a very constant element of the food. Most of the caterpillars are ground feeders and are overlooked by the birds which habitually frequent trees, but the Meadowlark finds and devours them by the thousands, not even passing by the hairy ones as most birds do.

The Western Meadowlark has been accused in California of eating the seeds of forage plants, especially clover, to an injurious extent. It has also in Southern California been charged with damaging the early crops of peas. Investigation of both of these accusations proved that local or exceptional conditions were the cause of the Meadowlark's fall from grace.

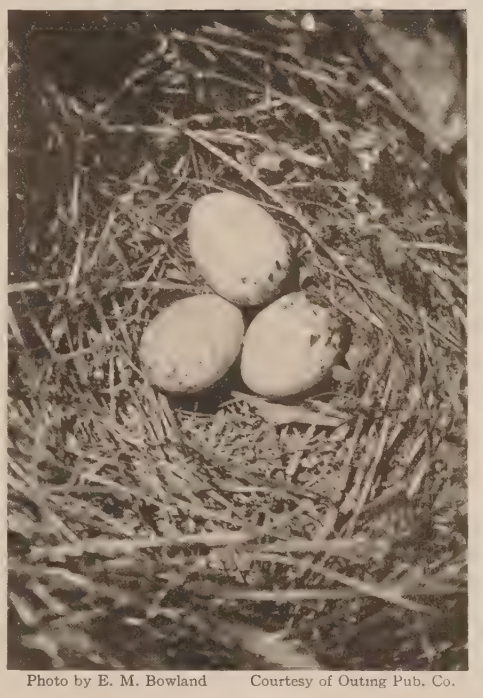


Photo by E. M. Bowland Courtesy of Outing Pub. Co.

NEST AND EGGS OF MEADOWLARK

AUDUBON'S ORIOLE

Icterus melanocephalus auduboni *Giraud*

A. O. U. Number 503

General Description.— Length, 9½ inches. Fore parts, wings, and tail, black; body, yellow. Bill, long and pointed; wings, moderately long; tail, more than ¾ length of wing, rounded.

Color.— Adult Male: Head, upper part of neck, fore portion of upper chest, wings (except lesser and part of middle coverts), and tail, black; inner wing quills and greater wing-coverts broadly edged with whitish; *lower hindneck, back, shoulders, rump, and upper tail-coverts, dull saffron-yellow* or wax-yellow tinged with olive-green, the shoulders partly black; sides of neck, lesser wing-coverts, and under parts (except as described), deep lemon-yellow, sometimes tinged with orange; middle wing-coverts, mostly black. Adult Female: Similar to adult male, but smaller and slightly duller in color, the back, etc., inclining more decidedly to olive-green.

Nest and Eggs.— Nest: Usually in mesquite trees, thickets, or heavy timber, from 6 to 14 feet up; constructed firmly, of dried grass, lined with finer; semi-pensile. Eggs: 3 to 5, pale bluish or grayish-white, with thin hair lines of purple and brown, very rarely with ground color obscured by minute, profuse dust-like specks of brown.

Distribution.— Southern Texas, lower Rio Grande valley; north to San Antonio occasionally.

Audubon's Oriole is essentially a Mexican species, but its northern range brings it into Texas, most commonly in the valley of the lower Rio Grande. It is naturally timid and retiring, and if it notices it is being observed while feeding in the open, is likely to retreat to thick cover.

The whistled note is sweet, with a suggestion of sadness, and the female sings as well as the male, though her voice is weaker. The birds are usually seen in pairs, and show strong affection and solicitude for each other. They have been found in high timber near San Antonio, and are not uncommon in and near Brownsville, Texas.

Drawing by R. I. Brasher

AUDUBON'S ORIOLE (⅓ nat. size)

A sweet whistler from Mexico who whistles in Texas, too

SCOTT'S ORIOLE

Icterus parisorum *Bonaparte*

A. O. U. Number 504

General Description.— Length, 8 inches. Fore and upper parts, black; under parts, yellow. Bill, long and pointed; wings, moderately long; tail, more than ¾ length of wing.

Color.— Adult Male: Feathers of head, neck, chest, back, and shoulders, uniform black; lesser wing-coverts, edge of wing, under wing-coverts, *under parts of body (except chest), thighs, under tail-coverts deep lemon-yellow,* the rump and upper tail-coverts usually washed with olive; middle wing-coverts, usually paler yellow, often passing into white at tips; rest of wings, black, the greater coverts tipped with white, and some of the wing feathers with narrow white margins; four middle tail-feathers, black with basal portion light lemon-yellow; rest with more than the basal half light lemon-yellow, the terminal portion, black tipped with white. Adult Female: Above, olive-grayish, becoming more yellowish-olive on rump and upper tail-coverts, the feathers of crown, back, and shoulders with darker center streaks, sometimes black with merely the margins grayish-olive; wings, dusky with light grayish-edgings, the middle and greater coverts broadly tipped with white, forming two distinct bands; tail, yellowish-olive with four middle feathers and terminal portion of the remainder darker, more grayish-olive; under parts, plain yellowish-olive, passing into clear yellow on middle of breast and abdomen. Immature Male: Similar in coloration to adult females, but larger.

Nest and Eggs.— Nest: Typical nesting site is in a yucca, about 5 feet up, near water; semi-pensile, rarely pensile; woven of grass, yucca threads, horse-hair, and cotton waste, and lined with fine grass and a felt-like down. Eggs: 2 to 4, marked with blotches and spots of purplish-black, generally without zig-zag lines.

Distribution.— Southwestern United States, Lower California, and Mexican plateau; north to western Texas, New Mexico, Arizona, southern Utah, southern Nevada, and southern California.

Though it ranges as far north as southern Utah and Nevada, Scott's Oriole is mostly a bird of the Mexican border as far as its presence in this country is concerned. In the great desert cañons of Texas, Arizona, and southern California, its clear whistle, much like that of the Meadowlark, is heard to good advantage with the song of the Cactus Wren.

Frequently these Orioles travel through the cañons in groups of from six to a dozen, feeding in the tree-tops. Despite their plumage the birds are often well concealed under these conditions, because their colors harmonize with the foliage. Furthermore, they generally move through the trees by clambering from limb to limb, rather than by flight, so that their movements are not easy to detect. Their presence is betrayed, however, by the loud whistled call of the males.

Drawing by R. I. Brasher

SCOTT'S ORIOLE (½ nat. size)

A brilliant lemon and black inhabitant of the desert cañons

SENNETT'S ORIOLE

Icterus cucullatus sennetti *Ridgway*

A. O. U. Number 505

Other Name.— Sennett's Hooded Oriole.

General Description.— Length, 8 inches. Fore and upper parts, black; under parts, yellow. Bill, long and pointed; wings, moderately long; tail, more than ¾ length of wing.

Color.— Adult Male: Lores, front portion of forehead, eye region, forward half of sides of head, cheeks, chin, throat, and upper chest, uniform black, *with a rounded posterior outline on the chest*; back, shoulders, and lesser wing-coverts, uniform black; middle wing-coverts, white, producing a very broad white band; rest of wings, black, the outer webs of greater coverts tipped with white, the primaries edged with grayish-white; tail, black, the lateral feathers margined at tips with pale grayish; rest of plumage, deep cadmium-yellow, the color most intense on head, neck, and chest. Adult Female: Crown, hindneck, rump, upper tail-coverts, and tail, yellowish-olive, the back of head tinged with dull brownish-gray; back and shoulders, dull brownish-gray; lesser wing-coverts, brownish-gray, more dusky centrally; rest of wings, dusky with pale brownish-gray edgings, the middle coverts broadly tipped with white, and pale edgings to greater coverts becoming white terminally; beneath, gamboge-yellow, paler on abdomen, strongly washed with grayish on sides and flanks.

Nest and Eggs.— Nest: A perfectly wrought cup-shaped, semi-pensile or attached structure, placed in clumps of Spanish moss, sycamores, oaks, figs, palms, or yuccas; constructed mainly of materials similar to tree in which located; typical nests composed almost entirely of Spanish moss; others, fastened to bayonet yucca points, constructed of fiber from edges of their leaves. Eggs: 3 to 5, pale bluish-white, wreathed around large end with brown spots and pencilings.

Distribution.— Lower Rio Grande valley, Texas, and Tamaulipas, Mexico; winters south of the United States to southern Mexico.

Sennett's Oriole seems to occur in the United States chiefly in a narrow strip of land between the Mexican line and the Rio Colorado, in Texas. The vegetation here is composed mainly of almost impenetrable thorny thickets, reinforced by yucca trees and cactus growths. Here, Mrs. Bailey records, she found this Oriole's home, which she describes as "one of the most skillfully wrought nests ever made, a perfect basket hung by the handle to the drooping bayonets in such a way that the sharp points protected it and yet left the bird an easy entrance. The nest was made of yucca fiber, decorative touches being given by bits of gray moss stuck on here and there."

The Arizona Hooded Oriole, or Nelson's Oriole (*Icterus cucullatus nelsoni*) is similar to Sennett's Oriole, but paler and with its forehead entirely yellow. It is found chiefly in Mexico and comes north into southwestern California, southern Arizona, and southwestern New Mexico. Once in a while it ventures into central California. It winters south of the United States.

Drawing by R. I. Brasher

SENNETT'S ORIOLE (½ nat. size)

A Mexican-border bird who builds where you must scratch your hands to get at the nest

ORCHARD ORIOLE

Icterus spurius (*Linnæus*)

A. O. U. Number 506 See Color Plate 75

Other Names.—Brown Oriole; Basket Bird; Orchard Starling; Orchard Hang-nest; Bastard Baltimore.

General Description.— Length, 7 inches. Fore and upper parts, black; under parts, chestnut. Bill, long and pointed; wings, moderately long; tail, more than ¾ length of wing.

Color.— Adult Male: Head, neck, upper chest, back, and shoulders, uniform black; wings (except lesser and middle coverts) black, with narrow whitish edgings; tail, black, the extreme base abruptly yellowish; *rump, upper tail-coverts, lesser and middle wing-coverts, and under parts of body (including under wing-coverts) uniform rich chestnut,* often deepening into bay on breast, the rump and upper tail-coverts inclining to burnt sienna; iris, brown. Adult Female: Above yellowish olive-green, becoming more yellowish on upper tail-coverts and tail, the back duller, with feathers indistinctly darker centrally; under parts, dull canary-yellow, tinged with olive on sides and flanks; wings, dusky, all the feathers margined with light olive-grayish (these edgings approaching white on longer primaries), the middle and greater coverts broadly tipped with dull whitish, forming two bands. Male in Second Year: Similar to adult female, but lores, front portion of cheeks, chin, and throat, black; breeds in this plumage; males more than one year old, but not yet fully adult, are variously intermediate between this black-throated yellow plumage and the fully adult livery; three years are required for full plumage.

Nest and Eggs.— Nest: In groves or orchards from 5 to 20 feet up; a basket-shaped, semi-pensile structure, frequently woven of green grass, lined with feathers. Eggs: From 4 to 6, pale bluish-white, spotted and

scrawled chiefly around large end with browns and purple.

Distribution.— Eastern United States and whole of Mexico; breeding from the Gulf coast north to Connecticut, southern New York, southern Ontario, southern Michigan (south of 43°), southern Wisconsin, central Minnesota, and southern North Dakota, but occurring irregularly or casually as far north as southern New Brunswick, Maine, and Vermont; west across the Great Plains; south in winter over whole of Mexico and Central America to northern Colombia; occasional in southern Florida and Cuba in spring migration. Southern limit of breeding range unknown, but probably extending over part of Mexico.

A much rarer bird with generally duller plumage, with a fainter, though more elaborate and really more beautiful, song, a nest which is more like that of other birds, and decidedly retiring manners, the Orchard Oriole naturally has fewer

YOUNG ORCHARD ORIOLES

admirers and friends than has the Baltimore. Catesby called it the Bastard Baltimore. Nevertheless he is a handsome and interesting bird, and always adorns the orchards, where, as his name implies, he is likely to be found.

There is as much difference between the nests of these two birds as there is in the appearance of the birds themselves. Unlike the Baltimore, the Orchard species makes no use of twine — unless it be by accident — but follows closely the habit of its ancestors and employs almost exclusively green grass blades and stalks, tightly and skillfully woven into a shallower pouch than the Baltimore's nest, but beautiful in color, proportions, and finish. Wilson recorded his careful examination of one of these nests in which he found a grass-strand thirteen inches long, that had been woven through and through the mass thirty-four times. Built of this material, the nest is almost invisible until the grass dries and turns yellow, which, of course, makes it exceedingly conspicuous among the green leaves and usually at just about the time when it contains the helpless young. That the birds have not learned by experience to correct this mistake, must be a poser to those who like to believe in the inerrancy of instinct and the subtlety which the wild creatures are supposed to employ in self-protection. As a matter of fact, this is only one of the many blunders which blind instinct continually makes.

Witmer Stone records the interesting observation that this Oriole often nests in the same tree with the Kingbird, who is also fond of the apple orchards as a nesting site. "For some reason or other," remarks Mr. Stone, "the pugnacious Flycatcher, who usually drives all other birds from the vicinity of his nest-tree, seems able to live on the best of terms with the modest Orchard Oriole."

An unusual nesting site for an Orchard Oriole has been reported from Portland, Conn.; this particular pair had their home forty feet from the ground in an elm.

The Orchard Oriole seldom visits the ground. Among the blossoms at the end of a branch is he most often seen searching for the insects of which his food mainly consists. Plant-lice, small caterpillars, the flies and wasps found about blossoms are his favorite foods. He also

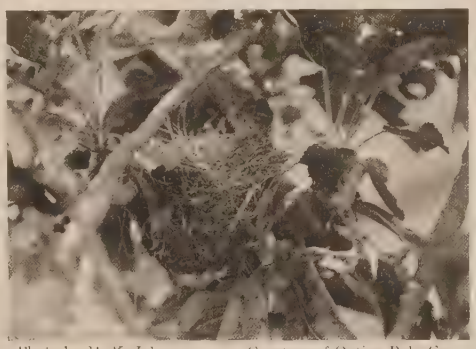


Photo by H. K. Job Courtesy of Outing Pub. Co.

NEST OF ORCHARD ORIOLE

With bill of young projecting

feeds on wild fruits, but very sparingly. It has been observed that when the young are able to leave the nest the entire family will adjourn to cornfields where they will feed upon the insect enemies of the corn.

Drawing by R. I. Brasher

ORCHARD ORIOLE (⅔ nat. size)

A beautiful but somewhat elusive bird with a curious nest-building habit

BALTIMORE ORIOLE

Icterus galbula (*Linnæus*)

A. O. U. Number 507 See Color Plate 75

Other Names.— Golden Robin; English Robin; Hang-bird; Hang-nest; Fire-bird; Pea-bird; Hammock-bird; Golden Oriole; Baltimore Bird.

General Description.— Length, 8 inches. Fore and upper parts, black; under parts, orange. Bill, long and pointed; wings, moderately long; tail, more than ¾ length of wing.

Color.— Adult Male: Head, neck, back, and shoulders, *uniform black*, that of the throat extending into middle portion of chest; rump, upper tail-coverts, lesser and middle wing-coverts, and under parts of body, *rich orange or orange-yellow;* wings (except lesser and middle coverts), black, *the greater coverts broadly tipped with white*, the wing feathers more or less edged with same; middle pair of tail-feathers, black except the concealed basal portion; remainder of tail, light orange or orange-yellow, crossed near the base by a broad band of black; iris, brown. Adult Female: Crown, hindneck, back, and shoulders, saffron-olive, the feathers with central spots of black or dusky; rump, upper tail-coverts, and tail olive-saffron, brightest (sometimes dull orange) on upper tail-coverts; wings, dusky, the middle coverts broadly, the greater coverts more narrowly, tipped with white, the wing feathers edged with gray (sometimes white on longer primaries); under parts, saffron-yellow or dull orange-yellow, paler and duller on abdomen, tinged with olive on sides and flanks, the throat usually with some black.

Nest and Eggs.— Nest: A remarkable example of bird craftsmanship. Suspension strings are first firmly tied to the branches, these forming the warp through which the plant fibers, milkweed stalks, gray strips of bark, horse-hair, or cord, are deftly woven. The completed structure is gourd-shaped, flaring at bottom and always gray-colored. Extreme ends of large elms are oftenest selected for the site, but nests are found on a large variety of trees, even the conifers. The perfection of their workmanship is proved by the fact that these homes sometimes endure the blasts of four winters. Eggs: From 4 to 6, white with the characteristic pen lines, scrawls, and spots of dark brown and black of the species.

Distribution.— Eastern temperate North America; breeding from more southern United States (Texas to the Carolinas), except along the Gulf coast, northward to Nova Scotia, southern New Brunswick, Ontario, and Manitoba (to latitude 55°); west to eastern Assiniboia, Montana, Wyoming, and Colorado, east of the Rocky Mountains; in winter south through eastern Mexico and Central America to Colombia and Venezuela; accidental in Cuba.

Courtesy of the New York State Museum

BALTIMORE ORIOLE *Icterus galbula* (Linnaeus)
MALE FEMALE
ORCHARD ORIOLE *Icterus spurius* (Linnaeus)
FIRST YEAR MALE FEMALE
ADULT MALE
MEADOWLARK *Sturnella magna magna* (Linnaeus)
All ½ nat. size

The Baltimore Oriole is a distinct success as a bird. To begin with, he is a superlatively handsome fellow, and comports himself with the ease and confidence of a prince. Again, though he is not a great musician, like the Mockingbird or the Hermit Thrush, there is real individuality, as well as mere cheerfulness, in the quality of his whistled greeting to those who have ears wherewith to hear what is really worth listening to. And finally, his nest is essentially an appropriate and logical domicile for a creature who doesn't care a fig for the law of gravitation, and never even heard of Sir Isaac Newton.

All birds should build their nests after the kind of the Baltimore's — and many do, notably the Warblers and the Vireos. Why should a creature, who is in no more danger of falling than a fish is of drowning, plaster a mass of mud, twigs, and grass on a limb as thick as one's thigh, or in a crotch which would support a five-ton steel safe? Why not sling a stout but dainty hammock from twigs which are plenty strong enough, and swing in the breezes?

It now becomes necessary to explain that it is my Lady Baltimore, and not his lordship, who is the designer and maker of this picturesque and appropriate habitation. Indeed, it appears that while my lady toils, my lord does nothing much but sit around and whistle and look gorgeous. Doubtless if he had both, he would have his hands in his pockets meanwhile. Furthermore, my lady has shown herself a very practical housewife by making use of materials now at hand, instead of sticking to those which her forbears used for ages. For, previous to the appearance of mere man on the scene, the Orioles had employed plant fibers, grass, and other natural materials in their nest-building. Her ladyship still uses these materials, but she reinforces the fabric with almost any kind of string or twine available, not to mention strips of cloth and paper, thus revealing the very interesting and significant fact that her adaptability — which in this instance amounts almost to the human quality called common sense — is stronger than mere instinct, that most powerful factor in shaping the conduct of all animals. In this important respect, the Oriole clearly displays more intelligence than do such birds as the Eave Swallow and the Phœbe, who continue to use nest-building materials which make their homes conspicuous in their new situations.

On the subject of the materials used by Orioles, Mrs. Mabel Osgood Wright records the

Drawing by R. I. Brasher

BALTIMORE ORIOLE (½ nat. size)

A bird whose whistle is as gay as his plumage

following interesting observations: "It is asserted that Orioles will weave gayly colored worsteds into their nests. This I very much doubt; or, if they do, I believe it is for lack of something more suitable. I have repeatedly hung vari-colored bunches of soft twine, carpet-thread, flosses, and the like, on the bark of trees

Photo by A. A. Allen

A PAIR OF BALTIMORE ORIOLES

At their nest on the tip of an elm branch

frequented by Orioles and, with one exception, the more somber tints were selected. In the exceptional case a long thread of scarlet linen-floss was taken and woven into the nest for about half its length, the remainder hanging down; but, resuming my watch the next day, I found the weaver had left the half-finished task and crossed the lawn to another tree. Whether it was owing to the presence of red squirrels close by, or that the red thread had been a subject for domestic criticism and dissension, I do not know." On the same subject Mr. John Burroughs writes (in *Riverby*): "One day we saw one weave into her nest unusual material. As we sat upon the lawn in front of the cottage, we had noticed the bird just beginning her structure, suspending it from a long, low branch of the Kentucky coffee-tree that grew but a few feet away. I suggested to my host that if he would take some brilliant yarn and scatter it about upon the shrubbery, the fence, and the walks, the bird would probably avail herself of it, and weave a novel nest. I had heard of it being done, but had never tried it myself. The suggestion was at once acted upon and in a few moments a handful of zephyr yarn, crimson, orange, green, yellow, and blue, was distributed about the grounds. As we sat at dinner a few moments later I saw the eager bird flying up towards her nest with one of these brilliant yarns streaming behind her. They had caught her eye at once, and she fell to work upon them with a will; not a bit daunted by their brilliant color, she soon had a crimson spot there amid the green leaves. She afforded us rare amusement all the afternoon and the next morning. How she seemed to congratulate herself over her rare find! . . . The woolen yarn was ill-suited to the Kentucky climate. This fact the bird seemed to appreciate, for she used it only in the upper part of her nest, attaching it to the branch and in binding and compacting the rim, making the sides and bottom of hemp, leaving it thin and airy, much more so than are the same nests with us. No other bird would, perhaps, have used such brilliant material; their instincts of concealment would have revolted, but the Oriole aims more to make its nest inaccessible than to hide it. Its position and depth insure its safety."

It is interesting to note also that the Oriole's homing instinct is apparently very strongly developed. Probably a pair never use the same nest twice, but there is evidence that the females may build their nests in the same tree for several successive years.

How the Oriole got his popular specific name has often been told, but ought not to be omitted from any sketch of him. It seems that when Cecil Calvert, second Baron of Baltimore, came to live with a company of English colonists in what is now Maryland, the settlement was named Baltimore in his honor. By way of giving the people at home some idea of the natural curiosities of the New World, certain of the colonists

sent back to the old country skins of a very beautiful bird which they called an Oriole. As is usual with names invented under such conditions, this one was a misnomer, because the European Oriole is a totally different bird from the one which the colonists so named. It happened, however, that the plumage of this American bird showed the orange and black, which were the family colors of Lord Baltimore, and therefore when Linnæus, the great Swedish naturalist, prepared in 1766 a scientific description of the American bird, he named it in honor of Lord Baltimore.

The Oriole's singularly cheerful call is an even surer sign of the final retreat of winter, than is that of the Robin or the Bluebird. In fact, the bird arrives in New England usually not until early in May, when spring generally is an accomplished fact. Throughout the next two months the males are almost continuously in song, to which the females add a more modest and less sprightly little warble of their own. The "song" usually amounts to little more than two or three call-notes, which can hardly be considered even a musical phrase. An amusing exception to this general rule was furnished by an Oriole who had his home in one of a group of shade trees in East Liberty, a suburb of Pittsburgh, Pa. It was the year when Lottie Collins was astonishing the natives with her famous *Boom, ta ra-ra, boom, de-aye* song, and it happened that the Pittsburgh Oriole repeated exactly, omitting only the first note, the opening phrase of that extraordinary effort, whistling it incessantly as he scouted through the tree-tops.

Thoreau, who had a keen ear for bird-music, and something like a distinct gift for reducing the phrases to words — as nearly as that can be done — thought that an Oriole of his acquaintance said something like, "Eat it, Potter, eat it!" which is ingenious as well as amusing, and about as accurate as such transliterations can be. The scientist, to whom the slightest deviation from literal and firmly established facts is a hideous crime, might be unable to overlook the misrepresentation in Lowell's pretty picture of the Oriole's struggle with the pack-thread, since the male bird is referred to; but, as a matter of fact, his lordship has been known to bring material to his spouse, though, in truth, she does most, if not all, of the actual weaving. However, the person who sees in birds more than a mere opportunity for classification and "orderly" arrangement does not fail to find essential truth and beauty in these lines of a poet who knew birds and loved them well:

> Hush! 'tis he!
> My Oriole, my glance of summer fire
> Is come at last, and, ever on the watch
> Twitches the pack-thread I had lightly wound
> Around the bough to help his house-keeping,—
> Twitches and scouts by turns, blessing his luck,
> Yet fearing me, who laid it in his way.
> Heave ho! Heave ho! he whistles as the twine
> Slackens its hold. Once more now! and a flash
> Lightens across the sunlight to the elm
> Where his mate dangles at her cup of felt.

Even finer, perhaps, are Edgar Fawcett's lines:

> How falls it, Oriole, thou hast come to fly
> In tropic splendor through our northern sky?
>
> At some glad moment was it Nature's choice
> To dower a scrap of sunset with a voice?
>
> Or did an orange tulip, flaked with black,
> In some forgotten garden, ages back,—
>
> Yearning toward Heaven until its wish was heard,
> Desire unspeakably to be a bird?
>
> GEORGE GLADDEN.

One of the cotton-growers' bird friends is the Baltimore Oriole. It generally reaches their district at about the time the boll-weevils are making their annual flight and immediately starts feeding upon them. Specimens which have been examined have contained on the average two weevils each, and one Oriole had eaten nine. Caterpillars form the largest item — 34 per cent.— in the Oriole's bill of fare. Plant and bark lice are so small that they are generally overlooked by most birds. But it is not so with the Baltimore Oriole; he searches for these damaging little pests. The larvæ of the click beetle, which are among the most destructive insects known, form part of the food of this bird, while ants are eaten in the spring, grasshoppers in July and August, and wasps and spiders throughout the season.

During the stay of the Baltimore Oriole in the United States he eats very little vegetable matter — only 16 per cent. of his total food being possible of that classification. He often gives cause for complaint by his bad habit of eating green peas; he sometimes strips the pods to such an extent that crops are severely damaged. Another accusation which he has to answer is that of puncturing ripening grapes; but investigation of this charge seems to prove that the only cultivated grapes he troubles are on vines that run up into trees where he can work unseen. The

simple preventive then would be to trim the vine. He is charged with attacking early apples and pears, piercing them with his bill to get at the pulp, and, of course, ruining each apple or pear. But probably more of this damage is done by Red-headed Woodpeckers, Robins, and Blue Jays, and even Catbirds and Grackles, and the Oriole loses his good name because of the company he keeps. However, the amount of damage done by him cannot be very great when there is such a small percentage of vegetable matter in his diet, and the amount of good he does in eating harmful insects should earn for him full protection and encouragement of his presence.

BULLOCK'S ORIOLE

Icterus bullocki (*Swainson*)

A. O. U. Number 508

General Description.— Length, 8½ inches. Plumage, black and orange. Bill, long and pointed; wings, moderately long; tail, more than ¾ length of wing.

Color.— Adult Male: Greater part of crown, hindneck, back, shoulders, lores, streak behind eye, front portion of cheeks, chin, and broad stripe down middle of throat, black; *rest of head and neck (including a broad stripe over eye and sometimes the whole forehead), orange;* the under parts similar, but rather paler toward the rear; rump and upper tail-coverts, orange tinged with olive; lesser wing-coverts, black and orange; exposed portion of middle and greater coverts, white, forming a large patch; rest of wing, including greater portion of inner webs of greater coverts, black, the secondaries (except at base of five or six outermost) broadly, the primaries more narrowly, edged with white; middle pair of tail-feathers black, except at base; next pair mostly black; remaining tail-feathers orange-yellow, with black or dusky at tips; iris, brown. Adult Female: Crown and hindneck, yellowish-olive, becoming grayer toward the back; back, shoulders, and rump olive-grayish, the back sometimes narrowly streaked with dusky; upper tail-coverts and tail, wax-yellow, rather brighter on edges of the tail-feathers; sides of head, stripe over eye, sides of neck, and chest (sometimes most of throat also), saffron-yellowish; chin and center line of throat, more whitish, sometimes blotched with black; rest of under parts, dull buffy-whitish, the sides and flanks tinged with pale olive-grayish, and breast (sometimes abdomen also) tinged with yellow; anal region and under tail-coverts more yellowish, sometimes distinctly yellow; wings, dusky, the middle coverts broadly tipped with white, forming a distinct band, the greater coverts and wing feathers edged with grayish-white.

Nest and Eggs.— Nest: Suspended from branches of poplars, cottonwoods, mesquite, or other trees, sometimes in a cluster of mistletoe, from 5 to 40 feet up; a woven, pensile structure of vegetable fibers, inner bark, and horse-hair, lined with wool, down, horse- or cow-hair. Eggs: 3 to 6, paler and of clearer bluish ground color than the Baltimore Oriole's and marked with erratic hair lines chiefly around larger end.

Distribution.— Western United States and British provinces and plateau of Mexico; north to southern British Columbia, southern Alberta, and southern Assiniboia; east to eastern border of the Great Plains in middle portions of South Dakota, Nebraska, Kansas, Oklahoma, and Texas, more sparingly to eastern portion of the same States; breeding south at least to northern Mexico; in winter south to Mexico; accidental in Maine.

The Bullock Oriole is one of our most striking birds in orange and black. In some parts of the Pacific coast, the bird is especially fond of nesting in an orchard tree near the house. The weeping willow tree is a great favorite. Through the irrigated districts, the bird may always be found among the cottonwoods and poplars.

As a rule, the Oriole builds a strong nest of horse-hair and fibers. It is usually made so strong and elastic that, if pressed together, it springs back into shape. It survives many a hard winter; for often where the Orioles live, one can count the old nests, still hanging, that have been used in years past.

It is difficult at times to try to explain the actions of a bird. I know of a pair of Orioles that lived in a neighbor's orchard. They swung their nest on one of the lower branches of a willow tree. One day, we saw the female Oriole light on a low branch in front of a window. In a few moments, she flew down and lit on the sash. Then she fluttered up against the window, trying her best to hang on. She would turn her head and watch in the glass. The more she looked, the more excited she seemed to get, fluttering against the glass until she was out of breath. The bird kept up these antics every day. It was not merely that she wanted to get inside, for when the window was opened, her curiosity seemed satisfied, but she did not enter the house. When the window was closed again, she kept flying against it, never accomplishing anything except to slide to the bottom.

The Bullock Oriole replaces the Baltimore

from the Rocky Mountains to the Pacific. He has a wholesome, rollicking song which goes well with his dashing color. The orange coloring is extremely beautiful in some individuals. The male is not in his best dress until the third or fourth year. Oftentimes you will see a male that is not really brilliant or that has not attained the orange hue. These are younger birds.

I remember a story told to me several years ago of a pair of Orioles that lived about a eucalyptus grove in California. The male bird was in such fine plumage that an ornithologist shot him for his collection. The next day, the female appeared with a new mate who was as bright and fine looking as the bird she had lost the day before. This bird was shot also, partly because he was in such fine plumage and partly to see if the female would find another as easily. Two days later, she appeared with a third husband who went the way of the two former ones. The female then disappeared for a few days, but returned again with a fourth suitor. The pair built in a eucalyptus tree and soon had a family of young birds. This may be a remarkable case of wooing and winning. It is rather difficult to understand where the supply of male birds came from unless the widow Oriole was breaking up other families.

WILLIAM L. FINLEY.

The food habits of Bullock's Oriole differ in no essentials from those of the Baltimore Oriole, the ratio between the animal and vegetable portions being practically the same. It is of interest to note that among the bugs which it eats is to be found the black-olive scale; these amount to nearly 7 per cent. of the bird's food for the year. The major part of its vegetable food is fruit, especially in June and July, when it often eats more cherries and apricots than the owners of the trees think is just. But it is probable that no great harm is done to fruit crops, as the complaints are not many. Injurious caterpillars form a large part of their vegetable food.

Drawing by R. I. Brasher

BULLOCK'S ORIOLE (½ nat. size)

This is the beautiful Oriole of the West, a good singer and a clever nest builder

RUSTY BLACKBIRD

Euphagus carolinus (*Müller*)

A. O. U. Number 509 See Color Plate 73

Other Names.— Rusty Grackle; Thrush Blackbird; Rusty Oriole; Rusty Crow.

General Description.— Length, 9 inches. Male, black; female, slate-colored. Bill, shorter than head, and narrow; wing, long and pointed; tail, nearly as long as wing, moderately rounded.

Color.— ADULT MALE IN SUMMER: Uniform black, faintly glossed with bluish green changing to dull

violet-bluish on head and neck; under tail-coverts, margined with whitish; bill, black; iris, pale yellow or yellowish-white. ADULT MALE IN WINTER: Similar to the summer plumage, but the black obscured by rusty brown on crown, hindneck, back, and shoulders, and by cinnamon-buffy over eye and on cheeks, chin, throat, chest, and sides. ADULT FEMALE IN SUMMER: Uniform dull slate color, dark and faintly glossed with bluish-green on upper parts; bill, black; iris, pale yellow. ADULT FEMALE IN WINTER: Similar to the summer plumage but crown, hindneck, back, and shoulders, overlaid by rusty brown, inner wing quills and greater wing-coverts margined with the same, stripe of buff over eye, and feathers of cheeks, chin, throat, chest, and sides tipped with brownish-buff. YOUNG: Above, dark sooty brown, more slate-dusky on wings and tail feathers; inner wing quills and terminal portion of greater and middle wing-coverts margined with rusty; stripe over eye of light rusty; under parts, brownish-gray tinged with light buffy-brown on cheeks, chin, throat, chest.

Nest and Eggs.— NEST: Located in alders or willows within a foot or two of the water; rather bulky, constructed of layers of leaves, grass, and mud, often lined with fine *bright green* grass. EGGS: 4 or 5, light bluish-green thickly blotched and spotted with different shades of chestnut, sepia, and drab; pen lines and scrawls characteristic of other blackbirds, nearly always absent.

Distribution.— Northern and eastern North America; breeding from Nova Scotia, New Brunswick, northern Maine, New Hampshire, Vermont, northern New York and northern Michigan north to Ungava and northwesterly to the Arctic coast and Alaskan shores of Bering Sea; south in winter to the Gulf coast (Florida to Texas); west more or less reguarly, to western border of the Great Plains, casually to Lower California; accidental in Greenland.

When the first sharp frosts come, when the foliage puts on the red and gold tints of autumn and the corn in the fields turns dry and dead, then the Rusty Blackbird begins to appear in the United States, arriving at first in small flocks

Photo by H. K. Job

FEMALE RUSTY GRACKLE SCOLDING NEAR NEST

from the northward. It is well known now over most of eastern North America but it was not always thus. Specimens of the Rusty Blackbird were described nearly a century ago under five different names by a "judicous" British naturalist. Wilson, in referring to this, points out the difficulty of judging correctly from dried skins alone, especially when individuals of a species vary much in size and color. The full-plumaged male Rusty Blackbird is almost pure black with a greenish gloss, while the young bird in autumn is mainly rusty-brown. Nevertheless, no one familiar with the species in life could fail to recognize it in any plumage as its notes are unmistakable. In flight and in the shape of its bill this bird somewhat resembles a Thrush.

Bendire and others tell of its song as being "rich, varied, and energetic" and speak of its chuckling, gurgling, wheezing, musical, agreeable notes, "like other Blackbirds," etc. Some of these descriptions may characterize correctly the song in the summer home, but I have heard only a short *chack* or *chuck* and a fine whistle or creak, intermingled more or less with gurgling or choking sounds. This song, if song it can be called, is very characteristic, and when a flock is started from its haunt on some oozy margin and flies to the tree-tops the chorus of *chucks* and weird creaks is inimitable. There is nothing else in the eastern United States that closely resembles it, although the *chuck,* often given separately, is much like that of other Blackbirds.

In spring the bird makes its appearance early in the North, often when snow is on the ground and ice still skims the edges of the streams. It is more of a forest frequenter than most Blackbirds; but it is attracted to water, and may be found in its seasons along the swampy borders of many a woodland lake, swamp, or stream.

As it breeds mainly north of the United States it is seen here principally in migration or in winter. In autumn the flocks are not closely confined to their sloughs and watery retreats, but visit cornfields, stubblefields, and even orchards

and gardens. They are fond of corn and other grains and, while many shot on the cornfields have had their crops full of insects, they commonly devour Indian corn in all its stages. At night they roost in marshes or in the button bushes and other vegetation growing about the edges of open water holes in river meadows. There they gather in large numbers, coming in toward dusk in small flocks and roosting, often in company with Red-winged Blackbirds and Cowbirds.

They are among the last of the Blackbirds to go South and sometimes small flocks remain in southern New England well into the winter months. In the South they often frequent rice plantations and cornfields but many retire to the swampy retreats of the Gulf States until the approach of the vernal equinox arouses again the longing which bids them seek the home of their nativity.

EDWARD HOWE FORBUSH.

In the spring the Rusty Blackbird can be found in swampy places wading along the shallow edges of streams and pools. Here he feeds mostly on insects, but eats weed seeds and waste grain. He eats numerous water-beetles and their larvæ, snout-beetles, leaf beetles, May-beetles, and great numbers of other beetles, nearly all of which are harmful. In the autumn he frequents cornfields, stubblefields, and beech woods, eating the same kinds of food as in the spring, but probably the percentage of insects is even higher. He eats but little wheat, oats, or corn except the waste in fields and the allegation that he pulls up sprouting grain has not been proved.

BREWER'S BLACKBIRD

Euphagus cyanocephalus (*Wagler*)

A. O. U. Number 510

General Description.— Length, 10 inches. Male, black; female, brownish-slate. Bill, shorter than head, and narrow; wing, long and pointed; tail, nearly as long as wing, moderately rounded.

Color.—ADULT MALE: Entirely black, the head and neck strongly glossed with violet, the rest of the plumage with bluish-green; more highly glossed in winter plumage; bill, black; *iris, pale yellow.* ADULT FEMALE: Head, neck, and under parts, brownish-slate color, faintly glossed with greenish on under parts of body and with violet on head and neck, especially on crown and hindneck; upper parts darker, especially wings and tail, which are more strongly glossed with bluish-green; bill, black; iris, light yellow.

Nest and Eggs.— NEST: Usually low, sometimes 30 feet up in trees or bushes; often in large colonies; constructed with a rough, coarse foundation of twigs, plant stalks, bark, and rootlets mixed and held together with manure or mud, and lined with finer similar materials with the addition of horse- or cow-hair. EGGS: 5 to 8, usually 5, dull greenish-white or gray profusely marked with erratic streaks and large blotches of sepia.

Distribution.— Western United States and British provinces and greater part of Mexico; north to British Columbia, Alberta, Saskatchewan, and Manitoba (breeding); east to Minnesota, Nebraska, Kansas, Oklahoma and Texas, occasionally, during migration, to Iowa, Wisconsin, Illinois, Missouri, Louisiana, and even South Carolina; breeding south to Lower California, southern Texas; in winter over the whole of Mexico to Guatemala.

Handsomest of all the Blackbird race is Brewer's Blackbird with his glossy black coat shimmering in the sunlight with reflections of purple, blue, and green. And he does not hide his beauty in some woodland solitude, but comes around the barn-yards where he exhibits very domineering manners toward the fowls. His principal nesting places are in the unsettled districts, in the trees or around the edges of marshes. Often, however, he builds in the trees near farmhouses. Like other Blackbirds, he nests in colonies, but these colonies are much smaller, the usual number of families being five to ten.

The love song of this beautiful bird is a rather ludicrous attempt at music making. *Tuck-tuck-qsi! tuck-tuck-qsi!* is one observer's translation of his sputtering plea. But the little lady in dull brownish-slate always seems much pleased with it and soon starts the building of the home. During this operation he shows her a great deal of personal courtesy, but he seems to think it would be beneath his dignity to lend a hand — or rather a beak — to aid her labors.

When fruit is ripe the Brewer's Blackbirds do not hesitate to take a share, and they visit the orchard daily for the early cherries. They claim a share of grain also, but do not appear to eat it at harvest time so much as afterwards. Mr. Walter K. Fisher, writing from Stockton, Calif.,

reports them as feeding on newly sown wheat that had not been harrowed in, eating nearly all thus left exposed. He describes the birds as in such immense flocks in the grain fields that at a distance they looked like smoke rising from the ground, and says that stomachs of birds taken were full of wheat. On the other hand, Prof. A. J. Cook, of Claremont, Calif., says that he considers it one of the most valuable species in the State. Mr. O. E. Bremner, State Horticultural Inspector, in a letter to the Biological Survey, says: "The cankerworm episode is quite

them. They were seen to eat freely of cherries, and the stomachs of those taken showed that a goodly proportion of the food consisted of cherry pulp. While these observations were being made, a neighboring fruit raiser began to plow his orchard. Almost immediately every Blackbird in the vicinity was upon the newly opened ground and many followed within a few feet of the plowman's heels in their eagerness to get every grub or other insect turned out by the plow.

On another occasion an orchard was watched

Drawing by R. Bruce Horsfall

BREWER'S BLACKBIRDS (½ nat. size)

They follow the furrow and eat the grubs

a common one with us here. In one district, Dry Creek Valley, Sonoma County, there has been a threatened invasion of the prune trees by spring cankerworms several times, but each time the Blackbirds came to the rescue and completely cleaned them out. I have often seen bands of Blackbirds working in an infested orchard. They work from tree to tree, clearing them out as they go. If a worm tries to escape by webbing down, they will dive down and catch him in mid-air."

In the cherry season, Mr. F. E. L. Beal of the United States Biological Survey observed these birds in the orchards, and collected a number of

closely while the far side was being plowed. A continual flight of Blackbirds was passing in both directions over the observer's head, and practically all of them alighted on the newly plowed ground, fed there for a while, and then returned, probably to their nests. When plowing was finished and harrowing began, the Blackbirds immediately changed their foraging ground, and followed the harrow as closely as they had accompanied the plow.

In so far as its animal food is concerned, but little fault can be found with the Brewer's Blackbird. The insects eaten are fairly well distributed among the various orders, and include

only a comparatively small number that are useful. As to fruit, no more is eaten than may be considered a fair return for the destruction of insects. The weed seed eaten must be set down to the bird's credit. All questions, then, in regard to its economic position must rest upon the grain it eats. Most of the grain is taken in the months from August to February, inclusive. The average amount consumed in those seven months is over 75 per cent. of the food, while the average for the other five months is less than 24 per cent., yet this last period covers the time from sowing to the end of harvest. It has a decided partiality for oats, and if abundant would undoubtedly prove a menace to the crop.

J. Ellis Burdick.

PURPLE GRACKLE

Quiscalus quiscula quiscula (*Linnæus*)

A. O. U. Number 511 See Color Plate 74

Other names.— Blackbird; Crow Blackbird; New England Jackdaw; Maize Thief; Keel-tailed Grackle; Purple Jackdaw.

General Description.— Length, 12½ inches. Plumage, black with metallic hues. Bill, about as long as head and decurved at tip; tail, long and graduated. The tail is plicate, or capable of being folded vertically, so that a transverse section is V-shaped, the two edges being brought near together when flying; because of this folding and the graduated form of the tip, the effect, when the bird is flying, is very peculiar, the tail appearing as if much longer on one side than on the other.

Color.— Adult Male: Head, neck, and chest, varying in color from metallic reddish-violet to golden-green; prevailing color of back and shoulders varying from bronzy-purple to metallic olive-green, but this always is broken by bars of metallic green, blue-bronze, or purple (or all of these tints); rump varying in color from purplish-bronze to violet; prevailing color of wings, violet or purple; the lesser and middle coverts usually banded with purple, blue, green, or golden; tail, dark purple, violet, blue or green, or (in worn or faded plumage) black glossed with one of these colors; under parts (posterior to chest), metallic purple, violet, blue, or green, the color varying in different parts, sometimes mixed with golden bronze; bill, black; iris, pale yellow or yellowish-white. Adult Female: Decidedly smaller than the male and much duller in color, the metallic hues more subdued, sometimes very faint.

Nest and Eggs.— Nest: Built preferably in a conifer, placed on a bough but often in fork formed by topmost whorl of branches; sometimes in hollows or cavities of trees near water; a loose, bulky structure of twigs, hay, and grains, frequently cemented with mud. From Kent, Conn., comes the report of the finding of the nest of this bird in the rushes of a marsh, a very unusual site. Eggs: 4 to 6, greatly varying in size and color; ground color greenish, blue to dirty brown, strongly marked with blotches and zigzag streaks or lines of brown and black.

Distribution.— Atlantic coast district of United States, east of Alleghenies; north to lower Hudson valley and northern shore of Long Island Sound; breeding south to uplands of Alabama, Georgia and the Carolinas, to Virginia (?) along the coast; occasional on western side of Alleghenies, in eastern Tennessee; winters mainly south of the Delaware Valley.

Drawing by R. I. Brasher

PURPLE GRACKLE (⅛ nat. size)

Handsome, picturesque, and popular despite his bad habits

In the respects that he is black all over and, when on the ground, walks, and — alas! — is a nest-robber, the Purple Grackle is like a small edition of the Crow. His cannibalistic propensities are well advertised by his neighbors, the Robins, Bluebirds, Thrushes, and Sparrows, who are often seen mobbing him with the utmost fury. And when the birds unite in giving one of their number a bad name, we may be tolerably certain that he deserves it. Furthermore it must be conceded that the Grackle's skulking manners in nesting time and his cold and cruel yellow eyes strongly suggest the birds' arch-enemy, the cat. In fine, that he is a good deal of a villain in bird-land is undoubtedly true, and to blame for this, for he may know that the scientists have put him among the *Oscines,* a suborder composed of "song-birds," a term which, however, in this connection, means simply that the bird included possesses well-developed vocal apparatus, and entirely disregards the question as to how he uses that apparatus, or whether he uses it at all. Perhaps the Grackle isn't able to make the scientific distinction between the song-bird who can sing and the song-bird who can't, and therefore supposes himself to be a singer. His demonstration of his proficiency in the "art divine" consists in drawing in his head in turtle fashion, puffing out his body, ruffling up his feathers and then emitting

Photograph by A. A. Allen

A BRONZED GRACKLE FEEDING ITS YOUNG

pity 'tis 'tis true, for there is no denying that the bird's plumage is very handsome; in fact, the iridescent hues on his head, neck, and shoulders are exceedingly beautiful; and he also makes an appeal for popularity on the score that his arrival is one of the surer signs that spring is at hand, and because he presents a fine appearance as he walks, indeed, almost struts, about on the deepening green of the lawns.

A mistake which this Grackle makes is in trying to sing. But perhaps the bird isn't entirely a sort of asthmatic squeak, which suggests the protest of a rusty hinge. When a considerable number of Grackles do this at or about the same time, the result is what somebody has aptly termed a "good wheel-barrow chorus."

The Purple Grackle is found in the Atlantic coast district of North America. In the interior, west to the Rocky Mountains, he becomes the Bronzed Grackle (*Quiscalus quiscula æneus*). In this part of the country his body is a uniform bronze color, except the chest, which varies from

Photograph by H. K. Job

Courtesy of National Association of Audubon Societies

BOAT-TAILED GRACKLES FEEDING WITH WILD DUCKS

This picture was taken from the window of a cabin on a bird-reservation in Louisiana

a greenish-blue to a brassy-green. (See Color Plate 74.) In Florida there is a smaller form of the Purple Grackle, called the Florida Grackle (*Quiscalus quiscula aglæus*).

The Purple Grackle has been proved by the examination of thousands of stomachs to take fully as much vegetable as animal food, the vegetable food being chiefly grain and fruit. This bird needs watching, for the grain he eats amounts to 45 per cent. of his food. About one-third of his food consists of insects most of which are of harmful species. He also eats a few snails, crawfishes, salamanders, small fish, and occasionally a mouse.

During the breeding season the Grackle does much good by eating insects and by feeding the nestlings with them. In the spring he will follow the plow in search of grub-worms, of which he is so fond that he sometimes literally crams his stomach full of them.

BOAT-TAILED GRACKLE

Megaquiscalus major major (*Vieillot*)

A. O. U. Number 513

General Description.— Length, 16 inches. Male, glossy black; female, sooty-brown above and light brown below. Bill, about the length of the head, narrow, and curved downward at the tip; wing, moderately long; tail, as long or longer than wing and graduated for from ½ to ⅓ its length. The tail is plicate, or capable of being folded vertically, so that a transverse section is V-shaped, the two edges being brought near together when flying; because of this folding and the graduated form of the tip, the effect, when the bird is flying, is very peculiar, the tail appearing as if much longer on one side than on the other.

Color.—Adult Male: Head and neck, glossy dark violet, passing gradually into steel-blue on the back and breast, this into dark bluish-green on rump, abdomen, and flanks (duller on rump); lesser wing-coverts, dark steel-blue, the middle coverts green or bluish-green; rest of wings, together with the tail, black, very faintly glossed with bluish-green; thighs, and under tail-coverts, black; bill, black; iris, light yellowish. Adult Female: Crown and hindneck, sepia-brown, rest of upper parts dark sooty-brown, faintly glossed with greenish; a stripe of lighter buffy-brown on the eye; a streak of dusky-brown back of eye; sides of neck, chest, and sides light brownish; chin, throat, and abdomen, similar but paler; flanks, thighs, and under tail-coverts, dusky-brown.

Nest and Eggs.— Nest: In colonies, among reeds, in swamps, in small trees, bushes, removed from water, in saplings or in fully grown trees as high as 40 feet above ground; a large, bulky, rough structure of sticks, grass, bark strips, and roots, generally coated inside with mud. Eggs: 3 to 5, generally 4, brownish-drab tinged with olive or green; irregularly blotched with brownish and black.

Distribution.— South Atlantic and Gulf coasts of United States (including whole of Florida); north to coast of Virginia, west to coast of Texas.

This is the "Jackdaw" of the South and is essentially a bird of the coast districts of that region. It got its popular name from the early settlers of the country on account of its superficial resemblance to the European Jackdaw, which, of course, is a totally different bird. It is very common in the marsh lands of southern Louisiana, Florida, Georgia, and South Carolina, and also on many of the swampy islands along the south Atlantic and Gulf coasts. A rather uncommon characteristic of the species is that in the spring migration the females precede the males. The maneuvers of the females in these spring flocks are also remarkable, their rapid and sustained flight, sharp turns, hoverings, and sudden dives, during which the flock remains closely bunched, suggesting to some observers the employment of signals from a leader. It is much more probable, however, that the evolutions are random and are due to the whims of two or three of the birds, which are instantly accepted by the others.

Like the other members of its family, this Grackle walks when on the ground, and not infrequently the birds catch passing insects by means of flying leaps into the air. Another curious characteristic of the species is the desertion of the females by the males immediately

incubation has begun. From that time the males remain in flocks by themselves. Upon the females, therefore, devolves all of the feeding and protecting of the young until they are able, with their mothers, to join the fathers who had deserted them.

In its insect food the Boat-tailed Grackle has no very pronounced tastes, and while it does not cause any great havoc among useful insects, it does not prey extensively upon harmful ones. In common with most other land birds, it eats grasshoppers freely in July and August, and it probably would eat caterpillars if it found them more plentiful than other foods. The animal food it decidedly prefers is small crustaceans — especially the small crabs called "fiddlers" — and these, so far as the interests of agriculture are concerned, are entirely neutral.

In its vegetable diet, the bird certainly does not commend itself to the agriculturist. Its preference for corn is very marked and shows no variance with the change of season. Investigations by the Biological Survey show that in any locality where this Grackle is very abundant it is harmful to the corn crop without rendering any well-defined service in return.

Photo by T. H. Jackson Courtesy of Nat. Asso. Aud. Soc.

NEST AND EGGS OF BOAT-TAILED GRACKLE

Orange Lake, Florida

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